OBSERVATIONS

ON THE DISEASE CALLED

THE PLAGUE,

THE DYSENTERY,

THE OPHTHALMY OF EGYPT,

AND ON

The Means of Prevention.

WITH SOME REMARKS ON THE

YELLOW FEVER OF CADIZ,

AND THE

DESCRIPTION AND PLAN OF AN HOSPITAL

For the reception of Patients affected with Epidemic and Contagious Diseases.

BY P. ASSALINI, M.D.

One of the Chief Surgeons of the Consular Guards, &c. &c.

TRANSLATED FROM THE FRENCH,

BY ADAM NEALE,

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WILLIAM GEORGE MATON,

M.D. F.R.S. &c. &c. &c.

THE

FOLLOWING TRANSLATION

OF

ASSALINI ON THE PLAGUE

AND DISEASES OF EGYPT,

IS INSCRIBED,

As a small tribute of esteem,

BY

HIS MUCH OBLIGED

AND SINCERE FRIEND,

ADAM NEALE.

Bloomsbury Square,
April, 1804.

TRANSLATOR's PREFACE.

AMIDST the variety of acute diseases which have at different times depopulated the earth, and imperiously called forth the energies of governments, and the solicitude and exertions of individuals, the Plague has long maintained a fatal pre-eminence. After ravaging, for several centuries, the finest countries of Europe, Asia, and Africa, it seems at length to have usurped a lasting dominion over the imperial city of Constantinople, the coast of the Levant, and the whole country of the Ptolomies, where, conjoined with the sloth, filth, and misery of the inhabitants, it bids defiance to the powers of medicine.

Happily for this country, we have long been strangers to its attacks. A period, indeed, of more than a century has elapsed since it has been observed in this metropolis. But although thus fortunately estranged from its destructive influence, we must still continue to feel a lively interest in the progress of this disease, and more particularly since the occurrence of the late campaign in Egypt. That country may again become the theatre of war; and it is therefore doubly incumbent on us to procure every possible information on the subject of its diseases, in order that we may the better be enabled to preserve the valuable lives of our brave troops.

It is to be sincerely regretted, that none of our own countrymen who belonged to the army of Egypt, have as

yet come forward with the information which they must have collected on this disease; and we are therefore constrained for the present to have recourse to the writings of the medical officers of the French army, who, it may here be remarked, possessed more extensive means of acquiring an accurate knowledge of the subject than our medical staff, owing to their longer residence in Egypt, and to their having had a larger field for practice and observation, from the superior magnitude of the French army.

But independently of the utility of the knowledge of the plague and epidemics of Egypt, in a military and political point of view, the subject possesses the most general and extensive claims to our attention. A just idea of the nature of diseases is only to be

acquired by a knowledge and investigation of various facts; and that physician who, to a sound judgment, unites the most extensive acquaintance with the maladies of different countries, will certainly be, *cæteris paribus*, the best practitioner.

Such then being my views in undertaking the translation of this work, I trust that it will fulfil the object proposed; and I sincerely hope, that a knowledge of the facts therein contained may conduce to throw further light on the contagious and epidemic diseases both of this and other countries.

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ERRATA.

Page 82, line 4 from the bottom, for *Livournia* read *Leghorn.*
—— 91, last line, for *the year* 7, read 8; and for 1799 read 1800.

INTRODUCTION.

HAVING been appointed to attend the grand park of artillery during the expedition to Syria, in the rank of medical officer, I arrived at Jaffa, on the 15th Ventose, in the year 7 (the 6th March, 1799), and on the 18th (9th), I took the charge of the hospitals in that city.

Forty days afterwards I received orders to follow into Egypt General Damas, and several other soldiers, who had been severely wounded; the unhealthiness of the country and other circumstances requiring that measure. On our return to Damietta the citizens who composed the board of health there, considering us to be affected with the plague, put us under strict quarantine. To beguile the *ennui* of my prison, I resolved to commit to writing (although in a foreign language) the ob-

servations which I had made on the disease which was the cause of our seclusion. I employed myself successively in this way during the different quarantines which I afterwards underwent at Cairo, at Malta, and in the lazaretto of Marseilles. These opportunities of observation led me to entertain doubts respecting the cause of the plague, and to form conclusions, that have not been generally adopted; which scepticism, conjoined with the peculiar circumstances in which I found myself placed during my residence in the Levant, have furnished me with evidences and facts which will contribute, in my opinion, to discover the real causes of the disease of Egypt, called the plague. This object will be the more easily attained, in proportion to the attention paid by the respectable general officers, the well educated medical staff, the natural philosophers, geologists, and other philosophical men attached to the colony of Egypt.

I have also added some particulars respecting lazarettos, the *seclusion* of the Franks in their own houses during the plague, the dysentery, and the ophthalmy.

Before we treat of these diseases, it will not be improper to give some idea of the circumstances which contributed to impair the health of our soldiers on their arrival in Egypt.

On the 16th Messidor of the year 6 (5th of July, 1798), after a voyage of forty-five days, the army of the east landed at Alexandria, in the best possible state of health, notwithstanding the inevitable inconveniences resulting to land troops from a sea voyage. On our arrival at Alexandria, we were encamped upon a dry, barren, and scorched soil: the thermometer stood at mid-day at 26° (82° Fahrenheit), the nights were cool; but the immense quantity of gnats or muskitoes prevented sleep by their punctures, which threw the skin into a state of inflamma-

tion resembling the measles. It would be difficult to express the painful sensation which these insects produced at the moment when they thrust their stings into the substance of the skin.

The army, not finding a sufficient quantity of fresh provisions in Alexandria, was obliged to continue to draw its supply from the fleet. This food was far from being of the best quality: the water likewise in the cisterns of Alexandria was scanty, muddy, and of a taste by no means pleasant to people just arrived from Europe. At this time also the nights were not only cool but damp; the ground was moist at day-break, as if there had been a fall of rain; winds from the south-west quarter prevailed: the vapours of the sea, and the exhalations of the lake Mareotis, which was not yet dried up, contributed to render a residence at Alexandria very unhealthy, particularly at this season. In short, Alexandria had just been visited

with the plague; and the Franks lived still shut up in their houses.

By the 18 Messidor (7th July), the whole army was on its march for Cairo. As we had not been accustomed in Europe to trouble ourselves with live stock, nor to carry a supply of water with us, we neglected these precautions; but what sufferings did we not endure during our march from Alexandria to Rhamanieh, across a country become a perfect desert, since, through the negligence of the ancient government, it is not now reached by the waters of the inundation? Having at length arrived at the Nile, we had the means of quenching the burning thirst which great fatigue had rendered the more insupportable. Continuing our march along the banks of this river, we frequently met with fields of *pastèques*, or water melons; and during the remainder of our march to Cairo, these delicious fruits continued to furnish the most de-

lightful and agreeable repasts, and produced a surprising effect on the health of our soldiers.

The army, after having gained the famous battle of the Pyramids, arrived on the 2d Thermidor (21st July), at Gisèh, and on the 4th (23d), at Cairo; where we found plenty of bread, meat of every kind, milk, eggs, fish, greens, and excellent grapes, at a moderate price: wine was scarce, but brandy and coffee supplied its place. The heat at Cairo was greater by three degrees than at Alexandria, the thermometer standing at 29° (86°); and towards the end of Thermidor (middle of August), it got up to 31° (89° Fahrenheit).

The Nile continued sensibly to overflow; and on the 1st Fructidor (19th of August), the dikes of the Calich were cut to allow the waters to enter into the squares and gardens of Cairo: on the whole, the inundation was considerable.

At the beginning of Vendemiaire, in the year 7 (the latter end of September, 1798), the thermometer was at 23° (75°) at midday, and during the night at 17° (64° Fahrenheit), although but a few days before it had been at 31° (89° Fahrenheit) at noon, and during the night at 22° (74° Fahrenh.) This change of temperature of course subjected our soldiers to diseases, because they were not yet accustomed to the climate, and unacquainted with the necessary precautions. The soldiers of the divisions on actual service always passed the night in the open air, or, if on the Nile, slept in open barks, whilst those in garrison, in order to profit by the coolness of the night, slept constantly out of their quarters, or close to large windows thrown open, where they were exposed to the north wind: the perspiration was thereby checked, and gave rise not only to rheumatic affections, which are very common in Egypt, but likewise to the dysentery

and ophthalmy. If to these positive causes be added the miasmata exhaled by the numerous marshes in Lower Egypt, we shall possibly discover the real source of the epidemic fevers which are known by the name of the plague, those of Jaffa having been of the same nature. Before we treat of these, it may not be amiss to describe the medical topography of that city, and to point out the particular circumstances which contributed to develope a disease that proved more destructive there than in any other place.

Jaffa, or Joppa, the small seaport town of the ancient Palestine, upon the Mediterranean, is situated on an eminence, and built in the form of an amphitheatre, in northern latitude 32° 20′, and in 52° 55′ of longitude from the meridian of Paris. The sea washes its walls on the north and the west: several very extensive woods, composed of an innumerable quantity of bushes, orange, citron, and other fruit

trees, cover this city on the south and the east sides. The chain of mountains which stretch from north to south, oppose a barrier to the clouds brought by the winds from the west and north, and give rise to the formation of thick mists and heavy rains, which take place in this part of Syria during the winter and spring. The nature of the soil, and the want of ditches and canals to drain the ground, occasion several ponds or marshes, which can only be carried off by evaporation. The French army, on its arrival at Jaffa, encamped close to three of these ponds, the waters of which supplied their wants till their departure for Acre.

On the taking of Jaffa by assault, the number of Turks killed and half buried; the bodies of those whom the sea threw back, and left on the shores; the miasmata arising from the putrefaction of the carcasses of the horses and camels left dead upon the ground, or dragged scarcely beyond

the walls; the want of fresh provisions; the filthiness of the inhabitants; the hordes of Bedouin Arabs who blockaded the city; these circumstances conjoined, in a few days overwhelmed us with all the miseries of war, famine, and pestilence.

The resemblance between several of the diseases observed in Europe and the epidemic fevers of Egypt, has induced me to say a few words on that which showed itself in the Ligurian Republic in the year 8 (1799-1800), and upon the yellow fever which broke out at Cadiz in the year 9 (1800, 1801).

Some epidemic diseases are rendered contagious by merely bringing together a certain number of individuals into the same place, and particularly in badly ventilated hospitals. In order to avoid this inconvenience, I have conceived the design of an hospital for the garrisons of each principal city on the coast of Egypt. It appeared to me to unite several advan-

tages, and I have had the plan engraved. I have also added some details relative to service, and the oily frictions, as practised in different cities in the Levant, but particularly at Smyrna, in the treatment of the plague. I submit the whole to the judgment of my fellow practitioners, that they may extract from it information towards attaining a knowledge of the mode of treating the disease, preserving the health of the medical officers and those employed in the hospitals; and to prove that the epidemic disease of the coast of Egypt is not always the plague.

Sat mihi, si prosim, scribendi magna voluptas.

METEOROLOGICAL OBSERVATIONS.

At Cairo in the year 7, 1798-1799.	Temperature according to the scale of Fahrenheit's Thermometer. Greatest deg. of heat. Morn.	Noon.	Least degree of heat. Morn.	Noon.	Mean weight of the air. Barometer. *Maximum* inch. line.	*Minimum* inch. line.	Mean direction of the winds.	Mean state of the sky.
From 23 Sept. to 23 Oct.	65°.	76°.	65°.	76°.	28 . 2	28.	S. S. E.	Cloudy.
23 Oct. 22 Nov.	57 . 6	72 .	50 . 5	64 .	28 . 2	28 . 1	S. E.	Foggy.
22 Nov. 22 Dec.	50 .	68 .	49 .	63 .	28 . 4	28 . 2	S. S. W.	Foggy.
22 Dec. 21 Jan.	42 . 6	72 .	37 .	55 .	28 . 6	27.	S. varia. W.	Cloudy. Rainy.
21 Jan. 20 Feb.	55 .	66 .		53 .	28 , 3	28 . 2	S. S. E.	Some clouds.
20 Feb. 22 Mar.	62 .			41 .	28 . 2	28.	E.	Cloudy.
22 Mar. 21 Apr.	62 .	53 . 5			28 . 4	28 . 1	S. E.	Clear.
21 Apr. 21 May	68 .	85 ,	50 .	73 .	28 . 1	28.	N. E.	Clear.
21 May 20 June	71 . 5	90 .	61 . 5	79 . 5	28 . 4	28 . 1	N. E.	Clear.
20 June 20 July	75 . 5	88 . 5	62 .	85 .	28 . 4	28.	N. E.	Clear.
20 July 19 Aug.	73 . 5	89 .	53 .	83 .	28 . 4	28.	N.	Clear.
19 Aug. 23 Sept.	84 , 5			68 .	28 . 2	28.	N. E.	Clear.

OBSERVATIONS

ON

THE DISEASES

WHICH ATTACKED THE ARMY OF THE EAST IN EGYPT AND IN SYRIA,

During the Years 6 and 7 (1798, 1799) of the French Republic.

I AM at a loss what name to give to a disease which attacks several individuals at the same time, and the chief symptoms of which are fever, buboes, partial gangrenes, or carbuncles, prostration of strength, headach and delirium, and which generally carries off the patient on the third or fifth day.

This disease, which every year shows itself more or less along the coast of the Mediterranean and Archipelago, from Alexandria to Constantinople, has been

named the plague. The Europeans, who have been long settled in the Levant, as well as those who practise medicine in Egypt and Syria, have called it the plague, and relatively to the number of its victims, they style it *the mild plague*, or *the malignant plague*. Prosper Alpinus informs us, that the plague is brought into this country along with the merchandize coming out of Greece, Syria, or Barbary. He asserts, that the plague which comes from Greece or from Syria to Cairo, is mild, and of short duration ; whilst that which comes from Barbary is fatal, and lasts a longer time; that this disease shows itself at the commencement of September, and constantly ceases in June, whatever may be its violence. The Europeans and the inhabitants of the Levant, settled in Egypt and in Syria, look upon the eve of St. John as the last day of the plague for that season. Those who are persuaded that this malady can only be contracted by contagion, not being able to impute the cause of the pestilential disease which appeared amongst our troops to the ar-

rival of any vessel from abroad, on account of the blockade by the English squadron, have pretended to attribute it to goods which, since the year before, had been left infected in the magazines of Alexandria and Damietta. As it is an opinion commonly received, that the pestilential virus adhering to some stuffs, remains inactive during the heats of summer, but that in winter it recovers its former activity, and causes the plague to burst forth anew; others have thought that this malady had existed during the whole year at Alexandria, although it did not show itself in several individuals at the same time till the winter season. Those who have employed themselves in investigating the nature of this disease, agree in saying, that the poison of the plague is an unknown, invisible vapour, which comes from distant countries, and is communicated by actual contact from one body to another, exerting its destructive powers on persons of every age and temperament. As to myself, I avow, that I cannot form any idea of this vapour.

The medical officers of the army of the east, not meeting with all the characteristic symptoms of the plague in this disease, called it *the fever with buboes*. Savaresi, the physician in ordinary to the army, distinguished it into the *synochus*, *simplex*, *lymphaticus*, *lymphaticus pestilentialis*, and *typhus gravior*. A great number called it the *prevailing* disease: but I preferred calling it the epidemic fever, that I might not make use of the denomination of the plague, a name full of terror, and often more mortal than the disease itself.

Whether this disease be really contagious?

Contagion has been distinguished by authors into volatile contagion and fixed contagion. The plague, which is certainly of all diseases the most severe and most fatal, has been supposed to arise from fixed contagion; and, according to the established principles of lazarettos, it has been judged sufficient to avoid immediate contact to escape the plague, and that hindering all communication will arrest its

progress: without this precaution, they pretend that the disease is communicated, and propagates itself from one country to another.

I have seen a great number of persons who have been attacked by the epidemic, after having had communication with others, who were already sick; and I would have adopted the conclusion, that it was to the contagion they ought to attribute their disease, if I had not also seen a much greater number who continued to enjoy good health, in spite of the most decided communication. I have even seen several individuals contract the disease, and die, although they had been living shut up, according to the manner of the Franks. I should have thought it right to conclude, that the disease of which we are now speaking was contagious, had I seen the Egyptians and Syrians fall under its influence as well as our soldiers, with whom they had constant intercourse. As soon as any one of our men was attacked, two Turks led or carried him to the hos-

pital. There is no doubt that several of them shared the cloaths of infected persons, without contracting the disease. If it had been contagious, as is pretended, it would not have been possible to have arrested its progress in Lower Egypt, nor to have hindered its spreading to Cairo. The lazaretto established near Boulac was at that time of very little use towards effecting so important an object. It is well known, that the fear of quarantine only caused the inhabitants to devise schemes to elude the vigilance of the guards of health, and custom house officers. Several Frenchmen and superior officers coming from Alexandria and Damietta by the Nile to Cairo, to avoid being detained for five days in quarantine, landed, with their horses, about a league from Boulac, and entered Cairo without performing it. How many pacquets and letters coming from Alexandria and Damietta, where the disease was raging, entered Cairo without producing any bad effect! What I have just said of the soldiers coming from

Lower Egypt will apply to those who came from Syria, where the same disease had broken out.*

* On his return from Acre, I attended the general of division Lasnes, whilst he was still under quarantine in the isle of Roda. I extracted a musket-ball, which had struck him in the temple, below the left eye, and which, passing along the temporal bone, had buried itself behind the ear. A little instrument which I had invented for making counter openings, was of great use to me in this operation, as it helped me to discover the ball, which was supposed to have come out at the ear, where there was an opening which poured out a good deal of blood at the time of the wound. This instrument directed me to the ball, without making useless probings or incisions. Soon after the arrival of this General at Roda, on being called in consultation, I extracted this ball, which had been so difficult to discover, that it had remained in that position during thirty-seven days.

It was in the breach at Acre that this brave officer received this dangerous wound: he immediately fell senseless; and his soldiers, believing him dead, brought him off from the battle, by dragging him by the feet for upwards of two hundred paces, that his body might not be left in the hands of the Turks. Twenty days after my operation, he chose, in opposition to my advice, to follow General Bonaparte to Aboukir, where he contributed greatly

In the month of Floreal (April, May) three soldiers coming from Bekaire-Tel-Agy, a fort situated three leagues from Cairo, where this disease had shown itself, were conducted to the hospital of Ibrahim Bey: they died two days afterwards. These men had intercourse with more than sixty persons. The committee of health gave it as their opinion that they died of the plague, and ordered this hospital to be put under a strict quarantine; during the course of which not a symptom of the plague occurred, nor even a single death; although just before there had died more than two every fortnight.

After the death of several medical officers at Jaffa, General Grézieu, commanding this province, recommended to the commissary of war, a native, who had the reputation of being an excellent physician for the plague: it was agreed that he should prescribe under the inspection of a

to the memorable defeat of the whole army of Mustapha Pacha. At this time he is commander in chief of the consular guards at Paris.

French surgeon. This man opened the buboes indiscriminately, his knowledge in medicine not being extensive. For several years he had attended such inhabitants of Jaffa as were attacked by the plague, and he used no precaution whatever to preserve himself from this complaint, nor to avoid contact. I have seen him get up with his bare feet on the bed of General Grézieu, covered with sweat, and take him by the arms to change his posture, although he was then attacked with a carbuncle, of which he died an hour afterwards. When he had opened the buboes with his bistoury, he took a bit of lint, or a little charpee, to wipe it, after which he placed it between his forehead and his turban: he went in this way from one patient to another, not only in the hospital, but even throughout the city, and did not put it back into his case, until his visits were over. Citizens Desgenette and Larray, the one physician, the other surgeon in chief to the army of the east, as well as several others of my colleagues, exposed themselves as much to the contagion with-

out suffering any inconvenience. It would be tedious to mention here all the particulars. Citizen Larray, besides the operations practised in this disease, opened several of the dead bodies, and examined with great attention all the parts, but particularly the buboes, and the state of the lymphatic glands, all of which were in general found more or less enlarged. Citizen Desgenette pointed out to me two punctures, which he had made on himself, while in Syria, with a lancet dipt in the pus of a bubo: he made this inoculation, persuaded that the disease was not contagious, and both of these learned and zealous staff officers have continued to enjoy good health. The Commander in Chief Bonaparte, great in every emergency, braved, on several occasions, the dangers of the contagion. I have seen him in the hospitals at Jaffa, inspecting the wards, and talking familiarly with the soldiers attacked by the epidemic fever and buboes: a conduct which produced the best effect, not only on the spirits of the sick, but of the whole army. This heroic ex-

ample encouraged at the same time the hospital attendants, whom the progress of the disease, and the fear of contagion, had alarmed considerably. I know that the advocates for contagion cite examples of persons and very large families who have died, because they had touched the sick, or the effects belonging to them, which, in their opinion, contained the germ of the disease: but they do not foresee, that it would result from this reasoning, that what they say of this disease may be said of the ophthalmy of Egypt, the fevers of Mantua, and, in fine, of all epidemics.

During the 2d year of the Republic (1794), ten thousand men perished in the space of four months in the army of the Pyrenees, comprising almost all the medical officers, and hospital attendants. In the year 3 (1795), and in 7 and 8 (1799, 1800), the same calamity befel the army of Italy in the bay of Genoa, and in the environs of Nice. Luckily, not discovering buboes, they did not pronounce it the plague, nor contagious, although the mortality was such, that a great many

soldiers, and some entire families, fell victims to the same disease. (See the Journal de Medicine, an. 9, page 373.) The campagnia of Rome, the environs of Perpignan, the departments of l'Ain in France, Hungary, Guinea, Bengal, and other countries, both in Europe and elsewhere, present spots where fevers show themselves, which make considerable ravages, and which are acknowledged to be epidemic, without being contagious, and mortal without being considered the plague. Lind, in speaking of Bengal, says, that in the rainy seasons, malignant fevers are contracted, which prove immediately fatal; the body becomes covered with livid spots, and the corpse black in a few hours. If these diseases be neither contagious, nor the plague, why give this terrible name to the epidemic observed in Egypt and Syria, and assert it to be contagious? One may contract, in my opinion, this disease, when the causes which produce it shall by degrees have impaired the health, and predisposed the body to take on diseased action: I will then admit,

that if a person be exposed to breathe the infected air in the chamber of a patient, or should he stay too long in the same atmosphere, he will run a great risk of contracting the prevailing malady. I have been careful never to stay longer by the sick than the time requisite to perform the necessary operations; after which I always went out to respire a better air. In this way I have been preserved from a disease which, in forty days, carried off one third of the garrison of Jaffa, including the commandant of the province, the governor of the place, and nine medical officers. I experienced a real satisfaction, when I approached the sick and felt their pulse, whether to learn their situation, or to encourage them by assuring them that they had not the plague. How often have I seen them resume their courage and recover after this assurance, and some advice, which acted more on the mind than on the body! Among our operations in these cases, bleeding required, more than all others, our close approach to the patient and his bed, because it is impossible

to perform it at a distance. For my own part, I followed the common method, without taking any precaution, except that of avoiding the patient's breath. In opening the bubo of an officer, the pus and corrupted blood spouted out on the back of my hand. I have slept in sheets, which, without my knowledge, had been washed by a female patient, who died the day after: she was the daughter of the consul of Ramlè. A young German, the wife of one of our soldiers, came to consult me at the hospital, during my absence: she laid herself on my bed a quarter of an hour: I went to visit her on the following day at her own house, and found her expiring. I confess, that these and other similar accidents did not contribute to render me more tranquil; but I had made up my mind: besides, I was at my post.

I will leave to those who believe this disease contagious, the trouble of explaining all these facts, and many more, well known to the army of Syria. The conservators of health, and those employed

in lazarettos, will be pleased to observe, that I speak of the disease which shewed itself during the years 6 and 7 (1798, 1799), in Egypt and Syria, and not of the plague.

Of the symptoms accompanying this disease.

An universal debility, accompanied by a great weight in the head, is a constant precursory symptom. The countenance has a particularly stupid look, difficult to be described. If the patient be of a sanguine temperament, and of a fine skin, his appearance becomes bloated, and his colour of a reddish purple; the minute vessels of the tunica conjunctiva become turgid with blood, as at the commencement of a slight ophthalmy: the patient in this state does not leave his usual occupations, but endeavours to keep on his trembling legs, although obliged often to have recourse to some object for support: he yawns frequently, rubs his face, and at last retires to lay himself in some solitary place, where he covers his head, and gives

himself up to sleep. If in this state he be left without assistance, his pulse becomes more quick and frequent, the heat of his skin more intense, and the universal debility greater. If interrogated, he stammers out a reply; his ideas become confused, and on the third or fifth day he dies delirious. Amongst the symptoms which were observed to precede this disease, there was a general affection of the nervous system, loss of appetite, slight inclinations to vomit; the tongue rarely showed any marks of derangement in the stomach; the stools became altered and liquid; the urine resembled distilled water; the glands of the groins and armpits, rarely those of the neck, became painful and swelled, and gave rise to buboes. In general, the whole lymphatic system appeared affected. Often small black spots showed themselves on the skin, which became perfect gangrenes. The dead bodies did not in general present any external change worthy of remark; sometimes there were found ecchimoses, or livid spots, on the parts of ge-

neration, and on those parts on which the body rested. Nothing very extraordinary showed itself in the internal parts; the lymphatic glands alone were particularly affected. This malady was very mortal in Egypt, and especially in Syria: one third of those attacked died in the early stage of the disease, the majority with buboes. Sweats were favourable, and carried off the fever; speedily after which the buboes disappeared; sometimes they came to suppuration, which rendered the disease and the convalescence very lingering. Carbuncles and gangrenes were bad symptoms.

Of the inhabitants of Jaffa who perished by the plague, a great number were infants, very few women, some men, almost all strangers. In general, the temperament and constitution of body, state of the fluids, age and sex of the patient, the season, the air, the winds, situation, the fear of death, and all the affections of the mind, modified this disease more or less. Persons of a full habit, infants with a fine skin and flaxen hair, young people of a

sanguine temperament and irritable fibre, were more liable to the disease than those advanced in age, or of a dry and bilious temperament. Such is my own habit of body; and I have no doubt that it was the cause of my enjoying health in the midst of so many dangers. After seeing a certain number of sick, I could not only distinguish at a glance their disease, but I was very rarely mistaken in my prognosis. I advised individuals, in other respects well and robust, to leave Jaffa, on account of their temperament. I encouraged, on the contrary, many others, because they were, in my opinion, of a constitution and temperament which rendered them fit to resist the influence of the disease. The following particulars will perhaps appear minute; but on the subject of so remarkable a disease, I think that trifling remarks, supported by facts, may be of some utility.

Immediately after the plague had manifested itself in Jaffa, Citizen Engelfret and his partner, two French merchants, established and known for several years in Egypt and Syria, shut themselves up alone

in their own house; the one was of a full moist temperament, the other meagre, and of a dry fibre: they were persuaded that seclusion and perfumes would preserve them from this malady, which they believed to be the plague. After some days I perceived that the latter began to contract the colour and appearance of a person about to fall sick. I communicated my suspicions to Engelfret, and advised him to quit their damp abode. Two days after, that very man was attacked with a violent headach, accompanied with fever and buboes, and died on the third day in the arms of his friend. I encouraged the affrighted Engelfret, who, in consequence of the contagion, thought himself gone: he confided very much on the knowledge I had of his temperament, which appeared to me a complete protection from the disease. The same thing happened a little time after to Citizens Malus and Bringuer; the one chief of a battalion, and the other captain of engineers: both were attacked with the same disease. The first, who was of a bilious temperament and delicate

constitution, recovered; but the second, who was sanguine, robust, and of a strong constitution, could not survive it.

Being sent for to the tent of General Boyer, and of Citizen Amelin, encamped without the walls of Jaffa, to avoid all communication with the city, I saw Citizen St. Simon, knight of Malta, and member of the institute of Egypt, severely attacked with the disease: I immediately despaired of his life: he died two days afterwards. I assured, at the same time, Citizen Amelin, that his interpreter would recover, although he had besides the headach, pain and swelling of the glands of his groins. Having had an attack of the plague the preceding year, he was very much alarmed at having it again. I caused him to be put into my servant's room, and I had some excellent warm punch prepared for him: I recommended him to cover himself well to bring on sweating. Two days after, he was able to return, in company with his master, to Cairo.

The keeper of the storehouse at Jaffa,

a man of full habit and moist temperament, was one of those who was the longest in falling ill. He assumed an air of pleasantry when one spoke to him about precautions. One day, seeing him yawning, rubbing his face, and looking sorrowful, I did not hesitate to foretel to Citizen Villars, commissary of war, with whom I was then walking, that it was all over with the store-keeper. I was called the same day to go to see him: I found him so completely reduced, that I announced to his comrades his approaching death, which very soon happened.

I should tire out the patience of my readers, if I were to mention all the facts which prove the facility with which a prognosis may be formed in this disease.

I have observed that those attacked became almost immediately indifferent and insensible to their situation; so much so, as to refuse making use of means to obtain a cure. I in vain recommended to my friend Auriol, physician to the army, to employ remedies, of which he himself had proved the efficacy on several occa-

sions: he preferred covering his head and going to sleep: he died in a few days. How often have I not entreated individuals to get up and show me their buboes; but they were in so complete an apathy, that they preferred lying abed and sleeping, which was a certain symptom of their approaching death, at least unless profuse sweats put an end to the disease. An infirmary-major, of a delicate constitution and bilious temperament, attacked with a bubo in his right groin, with fever and drowsiness, heard, on the second night of his disease, several persons knocking at his door; he made no answer: the people believed that he was dead, or just dying: in this belief they forced the lock, entered his chamber, and seized on his effects, which were in a trunk, and even his sash, which was under his pillow. The disease had reduced him to such a state of apathy, that, although he perceived they were plundering him, he preferred lying in his bed and sleeping, rather than opposing their taking away his property. He continued to sleep; but, fortunately for him,

profuse sweats came on, which carried off the disease, and put him in a state, on the following day, of reclaiming his effects, by detailing the circumstances of the preceding night.

Of the causes which could have produced this disease in Egypt and Syria.

This disease showed itself in the year 7 (1799), at Alexandria and Damietta, in the months of Vendemiaire (September, October) and Brumaire (October, November), afterwards at Rosetta, and two months thereafter in the army of Syria. On the 19 Ventose (11th March), I saw, for the first time, under the walls of Jaffa, about twenty soldiers attacked with the disease, who, not being able to keep on their feet, had lain down around my tent. I had them carried to the field hospital,*

* Being entrusted with the charge of the field hospital, as well as the head quarters, I recollect to have amputated the thigh of a soldier, whose leg had been carried off close to the knee by a ball, with fractures of the condyles of the femur: on

(ambulance) where the majority of them ended their days.

In the supposition of contagion, it is still a question to be answered, whether the disease was brought into Syria by the soldiers coming from Damietta, or whether the Turks taken prisoners at El-Arich and Jaffa communicated the infection to the French army?

It has never been clearly proved that the soldiers of Diezzar at El-Arich and at Jaffa were attacked with the disease. I saw, close to our camp, about four thousand of these prisoners driven together like flocks of sheep, and closely guarded for three days and three nights, without a single one falling sick. If the disease had been amongst these people, it would

the day after the operation, he was in a pretty tolerable state, although he was placed between two unfortunate men who had died the same night with buboes. This patient, after the storming of Jaffa, was removed to the hospital, where he recovered perfectly. Citizen Zink, surgeon of the second class, and Citizen Miot, commissary of war, who had charge of the head quarters, and assisted at this operation, were witnesses to this fact.

certainly have discovered itself in some of them, which did not happen. This fact, known to the whole army, sufficiently proves, that neither the plague nor any other disease existed among the troops of the Pacha of Acre. The case was the same with regard to the Turkish troops who were in El-Arich; since the Mograbins, who fought in this fort, and who were retained in the rear of our army, forming a corps-of auxiliaries, enjoyed, to a man, perfect health.

Let us next enquire, whether the troops of the division Kleber, coming from Damietta, could have brought the disease to the army which came direct from Cairo. It is a certain fact that, after its departure from Damietta, the division Kleber had no more sick, and, upon the arrival of the army of Egypt in Syria, it marched to Jaffa, and afterwards towards the Jordan, without having any intercourse with the troops which came from Cairo.

If the army coming from Egypt, on its arrival in Syria, was attacked by an epidemic disease, which, from the havoc it

caused, was called the plague, it ought not to be attributed to contagion, but to the fatigues we underwent in crossing the deserts which separate Egypt from Syria. In order to have a just idea of this, it will be useful here to trace back the march of the troops.

The army appointed to march into Syria, left Cairo about the middle of the month Pluviose, of the year 7 (the beginning of February 1799); and although then winter, the days were very hot, and the nights clear and temperate. The army, which enjoyed perfect health, crossed the desert with heroic courage. Having, in a few days, consumed the water, which we carried in our rear, we were often forced, by want, to make use of brackish water, or mud mixed with water, which, instead of diminishing, only increased our thirst. To this privation was added the want of live stock; and having no other resources, we killed the horses and camels, now become useless to us, and fed on their flesh, which we were obliged to eat without bread. After a march of one-and-twenty

days, we arrived in Syria, and halted the 5th Ventose (24th February), close to Gaza; the 11th (2d March), near Ramla; and on the 13th (4th March), under the walls of Jaffa.

The soil of Syria presented neither the barren plains, nor the burning sands of the desert which we had just crossed. At this period the westerly winds, loaded with vapours from the sea, prevailed: these vapours, condensing in a colder temperature, produced very heavy rains, accompanied with dreadful storms, which rendered the roads more fatiguing. The flats became filled with water, so that the waters of the rivulets, which we were often obliged to ford, came up to our sashes at the first step.

How often were not our soldiers drenched with the rains, not only during the day, but also during the night. They had all slept on the damp soil of Ramla, had all breathed the thick fogs of its environs, covered with an immense number of olive-trees; all had not equal opportunities of drying their wet cloaths, of co-

vering themselves during the night in order to perspire, nor of procuring a little brandy to warm themselves. Having arrived at Jaffa, the division Bon was encamped on the right, the division Lannes on the left: the head quarters of the General and the park of artillery were on an eminence to the south of the city: the division Bon was placed close to the sea, immediately on the banks of a lake full of stagnant water, and the direction of the winds was such that the exhalations of these marshes were carried into the camp of this division. The disease first began to show itself amongst these troops, although they had come direct from Cairo. Citizen St. Ourse, surgeon of the first class, made a circumstantial report to the medical officers in chief of the army, apprising them, that the division Bon, and the 32d demi-brigade especially, were affected with a suspicious disease, accompanied with buboes, from which the other divisions were not exempt. It is well known that the air of Jaffa, and of the whole coast of Syria, is damp, heavy, and

infected by the exhalations of marshes, and that the action of the sun's rays through this thick atmosphere is very pernicious. Our soldiers, after a residence of eight months in Egypt, were neither accustomed to cold nor rain, and could not become habituated to the great varieties of the temperature of Syria with impunity. The fine climate of Cairo, and the air which they there breathed, gave to the body a state of remarkable health, which of course became impaired in a damp and unhealthy situation. It is well known that an atmosphere, loaded with exhalations, whether vegetable or animal, contains less of oxygen than a pure air; and since oxygen is the principle which furnishes caloric, it follows, that in a vitiated atmosphere, the health must become weakened for want of caloric. Hence, spirituous liquors, and a strengthening and aromatic diet, would have been very useful, because they excite the principle which gives life to the circulation of the blood and fluids in general. We had nothing at Jaffa but rice and bad bread; ani-

mal food, wine and brandy were wholly wanting

I constantly observed that whenever the winds from the south and south-west prevailed, the number of sick and of deaths was always encreased. The contrary happened in fine weather, and when the wind came from the north.

Damietta, Rosetta, and Alexandria, during the autumn and winter, became in the same state as we shall observe hereafter. Alpinus has remarked, that every year very malignant epidemics break out in these cities. *Autumno grassantur febres pestilentiales multæ quæ subdole invadunt, et sæpe medicum et ægrum decipiunt.* (Alpinus de Medicina Egyptiorum.)

Indications of cure.

The indications in the treatment of this disease were,

1. To diminish the superabundant quantity of fluids, when such a state existed.

2. To empty the primæ viæ, when they were loaded.

3. To excite perspiration and sweating.

Treatment.

When at the commencement of the disease I met with persons of a good constitution, who had decided symptoms of true inflammation, I saw the necessity of making use of bleeding, in proportion to their strength; and I found this happen oftener than I should have imagined. I never had occasion to repeat it; but when it was indicated, this first operation succeeded very well: the headach, as well as drowsiness, diminished; the pulse became soft, and the skin relaxed, which facilitated perspiration and sweating. This artificial state of relaxation at the same time disposed the solids the better to support the action of sedatives and sudorifics. When I met with symptoms which convinced me that the primæ vitæ were loaded, and when the patient had been already sick, I preferred making him drink a glass of tepid water, with two ounces of olive oil, in order to evacuate the stomach, without irritating or enfeebling it by an emetic. I administered with advantage tartar

emetic in the dose of two or three grains dissolved in four or six pints of water, as a sudorific, but never as an emetic or purgative, since these remedies always proved hurtful. I gave a decoction of tamarinds, or of herbs, as a drink, to carry off the bilious stools, in those cases where this evacuation appeared useful. Having thus prepared the patient, I proceeded to calm the nervous irritation, and to excite perspiration and sweating; for which purpose I prescribed, three or four times a day, a little almond emulsion, with fifteen or twenty drops of the liquid laudanum of Sydenham. At the same time I advised the patient to keep himself tranquil, and well covered, in order to hasten the perspiration necessary for his cure.

While we were still under the walls of Jaffa, not having any other medicines, I made several of the soldiers take a cup of coffee, with the juice of a citron, instead of sugar, and this repeated five or six times a day. On our entering Jaffa, I found a little Peruvian bark. I then had the following mixture prepared for the sick:

Peruvian bark in powder, coffee in powder, each one drachm, boiled in eight ounces of water for a quarter of an hour, so as to form a strong decoction, towards the end adding the yellow rind of a citron.

I gave this mixture to several patients dreadfully ill, every six hours, for three days together, and with great success. I likewise found it very useful as a preservative, and I had a cupful given every morning to the wounded, to support their strength; and these men often complained that they had not received a full cup of the *bitter coffee*, for so they called the decoction. From the use of this draught, and of warm lemonade made spirituous when we could find a little brandy to add to it, I have seen a great number of individuals attacked with the disease, recover; and more than two hundred wounded preserved, in spite of their constant communication with those who were infected.

To diminish the headach of our sick, many of our physicians have recommended the application of blisters to the nape of the neck, the arms, and legs. If we

had had any cantharides, or blistering plaster, at Jaffa, I should have preferred applying one over the scalp, as is recommended in apoplexies, affections of the brain, &c. having often seen this practice adopted by the celebrated Desault, when I attended his course at the Hospital of Charity, and the Hôtel Dieu at Paris.

It has been observed, that those people who manufacture or carry oil, are never attacked with the plague. Hence, it has been maintained, that frictions of tepid oil prevent or cure this disease. The result of the observations made by Father Louis of Padua, director of the hospital for the plague at Smyrna, is the most favourable. He asserts, that during the twenty-seven years which he has been in this situation, he has seen no means employed against this disease more useful than frictions of oil; and to this day, in Smyrna, and several other lazarettos in the Levant, frictions of tepid oil are generally adopted as the best remedy. As soon as a patient, attacked with the plague, is received into the hospital at

Smyrna, he is taken into a close chamber, where they light a large pan of coals, in which they throw sugar and juniper berries, or other perfumes; they then strip off all his cloaths, and rub his whole body with warm oil, until profuse sweats break out. The patient is then put into bed; and whenever the sweating ceases, they repeat the frictions in the same manner, and so on successively during several days, until the disease has spent its violence in consequence of the sweating. One pint of oil is sufficient for each friction, taking care not to commence the second before the sweating occasioned by the first has ceased. Those who rub the patient take no other precaution than that of avoiding his breath; and in this way none of them have ever caught the disease.

In the space of five years, two hundred and fifty persons infected with plague have been received into the hospital at Smyrna, and I am assured that all those who were thus treated, have recovered, and that the number of persons preserved from the plague by frictions of oil is immense.

In whatever way oily frictions act on the human body, one thing is certain, that in the mode practised at Smyrna, they are useful. In my opinion, the tepid oil softens and relaxes the skin, opens and sets free all the pores or extremities of the exhaling vessels, whilst it produces quite a contrary effect on the terminations of the lymphatic absorbents, which it closes up and obstructs.

During the fever, the skin is commonly dry and shrivelled, the extremities of the exhaling vessels, or pores of the skin, are closed, and present too great a resistance to the more liquid part of the blood, which is retained in the mass of fluids. This does not happen when the texture of the skin is relaxed, and the pores open. Besides, the oil contributes to cleanse the skin more than any other fluid, and absorbs, at the same time, a part of the caloric accumulated on the surface of the body; hence, perspiration and profuse sweats follow, which alone cure these diseases.

To prolong the sweating, or to excite it

when slow in breaking out, it is necessary to have recourse to other means at the same time. Opium in substance, and all its different preparations and combinations, the theriaca, dioscordium, and James's powder, are the sudorifics most employed. Camphor, valerian, sal ammoniac, and pure ammonia, spirit of hartshorn, the decoction of the sudorific woods, of elder flowers, of the leaves of sage, and especially punch, are of great use in this disease. These not only excite sweating, but also give tone to the fibre, re-establish and strengthen all the bodily and mental functions, and bring back a healthy state of action.*

* The directing commissary Michaud, being at Alexandria, shut up in his own house, which he dreaded quitting, on account of the mortality from the plague, which had broken out there, perceiving one evening that he was about to be attacked with the disease, which had just carried off eleven persons in the same house, resolved to prepare a large bowl full of warm punch, the whole of which he drank off before he went to bed. During the night he had such violent sweats, that on the morning he found himself quite drenched, as if several buckets

To whatever it may have been owing, it is at least certain, that our medical officers in chief, Citizens Desgenette and Larray, in Syria; Citizen Dieche, near Acre; Citizen Savaresi, at Damietta; Sottira, at Rosetta; Ghislemi, Balbes, at Alexandria; and several other physicians and surgeons, constantly cured two thirds of the sick under their care, the major part with buboes. The activity, zeal and constancy which these medical officers displayed under such circumstances, merit the highest eulogium; and what trophies have they not earned in the numerous victims whom they rescued from the grave! The cure of so great a number of patients of this description proves how inhuman and barbarous it is to abandon to their fate the unfortunate, under the pretext that, having the plague, they may communicate their disease in a thousand fanciful ways. It follows, from this desertion, that they are shut up, fled from, proscribed, and

full of water had been poured over his body and bed. The symptoms of the malady disappeared, and he recovered perfectly. He is now in France.

crowded together, the most part of the time, in infected places so ill suited to their cure, that they would, on the contrary, have contracted the disease, if they had not had it already. There, they no longer find the beneficent hand to afford them succour, or diminish their sufferings. The overseers of the hospitals, whom fear and terror have rendered deaf to their wants, fly from them, or refuse them those things of which they stand most in need; so that they are forced to end their days in a manner the most melancholy and afflicting in the eyes of him, who, through choice, prefers and exercises the practice of physic.

Of buboes and gangrenes, known under the name of carbuncles, or ahthraxes.

In my Medical Essay on the lymphatic system, I have shown the situation and immense number of glands belonging to these vessels. Wherever there are superficial lymphatic glands, there buboes may

arise: in fact, it is not uncommon to see this disease in different parts of the body at the same time. When these glands become inflamed, they either remain scirrhous for some time, or go off by resolution; but most frequently they suppurate.

When the buboes are accompanied with a low fever, drowsiness, and loss of strength, the patient dies before any signs of suppuration appear in the parts.

To facilitate the suppuration of these glands, or buboes, some applied cataplasms of different kinds, but without any advantage, and they always attributed the loss of their patient to the buboes which did not suppurate. Afterwards, contrary to all the principles of the art, they opened these glands with the bistoury, before they showed any symptom of suppuration. They soon perceived that this practice was not more successful than the first; and it was then determined to make use of actual cautery, from a persuasion that the fire would hasten the suppuration of the buboes, and put an end to the disease.

I myself was of this way of thinking, and I made two cauteries with a hot iron, by means of which I penetrated down to the very glands: the inflammation which followed, produced no advantage. Citizens Auriol and St. Ourse, who employed this practice after me, not being more successful, gave it up. I at last recommended the repeated use of frictions of tepid olive-oil upon the diseased glands, to soften the skin, and facilitate suppuration; and whenever there were certain symptoms of a collection of matter in the bubo, I opened it with a bistoury, and healed the sore.

I was sent for, within a few days after my arrival at Jaffa, by Don Joacina Cenda, grandee of Spain, father *procureur*, or agent, of the fathers of the holy land, a man very robust, of a full habit and sanguine temperament, aged about fifty-five. He had been attacked the evening before with fever, preceded by slight shivering, accompanied by such violent symptoms of inflammation, that I thought it proper to take away some blood. As he complained very much of a fixed pain in his loins, I

requested to examine the part: what was my surprise on seeing between the last dorsal and first lumbar vertebræ, a little round black spot, surrounded with a purple erisipelas, very extensive, and covered with small vesicles, or phlyctenæ, filled with a transparent fluid. I then understood that the real nature of his case was a carbuncle, or rather a gangrenous affection, which, in three days, became seventeen inches in circumference, and three lines in thickness at its edges; at its centre it had the consistence and colour of black leather. This patient took, in three days, five ounces of Peruvian bark, made use of weak lemonade for drink, and for nourishment, took some rice boiled in a very little water, without salt, and seasoned with canella, and orange flour water. He also took every day a large cup of Spanish chocolate, and sometimes some Moka coffee, and recovered completely. I heard of him afterwards when in Egypt, and particularly a year after, when at Alexandria. He had resided for twenty years in ancient Palestine, during which lapse of

time he had seen the plague fifteen times epidemic. He had never contracted the disease, notwithstanding his duties as a clergyman were exposing him constantly to the contagion.

I have seen these black spots like petechiæ, degenerate into true gangrenous eschars, although at first they appeared of very little moment.

This disease, although local, had for its cause the bad state of health of the patient; hence it was necessary to attack the cause first, in order to hasten the separation of the diseased from the sound parts. The use of bark and of opium, recommended by the most celebrated physicians in gangrenes, antiseptics, corroborants, and stimulants, were of the greatest use, after having subdued the first symptoms of inflammation. The oily frictions, and the cerate of Galen, as simple emollients, may contribute to the spontaneous separation of the gangrenous part: an operation more of nature than of art.

I have seen in Jaffa some soldiers with pimples or ulcers on their face, of a parti-

cular description: although, it was at Jaffa, I believe that this might have been the same as the disease called the pimple of Aleppo. The description which travellers give of this disease in their works, authorises me to think so. (See Volney and others.)

I may be permitted to call in question the opinion that this disease arises from the quality of the waters which are drank in this country. We observe several diseases indigenous in many places, without being able to determine their causes; and there appears to me as little foundation for attributing the pimple of Aleppo to the waters of its environs, the lepra arabum to the bread of Cairo, the elephantiasis to the salt fish of Damietta, the hydrocele to the brandy of dates, the ophthalmy to rice; as for attributing the plague to an unknown vapour, brought almost every year from distant countries into Egypt.

Of the means to be used for preventing this disease.

During my stay at Jaffa, I made use of no extraordinary means to avoid it. I was convinced that the disease was epidemic, and that, if my health became impaired by a concurrence of any causes whatever, I could not escape it, even by the most strict seclusion, no not even if I had been surrounded by the whole guard of health *(garde sanitaire)*. As I was persuaded that obstructed perspiration, damp and infected air, the exhalations of marshes and bad food, were the principal causes of this disease, I endeavoured to avoid unhealthy places, damp and cold air, and made use of the best food I could procure; and as I knew the influence of the affections of the mind in predisposing to disease, I avoided all melancholy ideas, by being always employed.

When I went to the hospital, I always endeavoured to arrive there without being in a perspiration; and before entering the wards, I took, in the apothecary's shop,

a large cup of the *bitter coffee*. During my visit, I held in my hand a citron stuck full of cloves, without attributing to it any great importance. After paying my visit, I took a walk, or got on horseback; and although not of a constitution to perspire easily, I never returned without being in a sweat. Before going to bed, I took a glass of punch, or spirituous lemonade, made very hot; after which I lay down, covering myself well up. During the night, I never failed to perspire considerably. These were the only precautions which I took to preserve myself from the disease of Jaffa.

During all the epidemic fevers, and even the most dreadful plagues, there have been in those cities and provinces, where these diseases were raging, some healthy spots. The citadel of Cairo presents one example. It has been observed, that the inhabitants of this fort and its environs have always escaped from the plague, even from that of the year 1791. If the inhabitants of this fort, in spite of their daily intercourse with those of the city, were preserved

from this disease, it must be because the damp and infected air which had destroyed the health of the inhabitants of Lower Cairo, had not sufficient elevation to reach to the highest part of the citadel and its environs, and consequently could not impair the health of those who lived there.

At the time when I was doing duty in the military hospital of this fort, I have often seen, at the rising and setting of the sun, the whole city enveloped in a mist so thick, that it was impossible to distinguish even one of the innumerable minarets of this immense metropolis, although the fort was then enlightened by the rays of the sun, and the air which we there breathed was elastic, pure, and light.

In 1764, an epidemic fever showed itself in the kingdom of Naples, and, conjoined with famine, made such immense havoc, that two hundred thousand persons perished. Negligence and terror had withdrawn from the sick, scattered here and there over the city, all kind of assistance; a circumstance which became the principal cause of the progress of this disease. Ex-

perience having shown that the sick removed to the sea shore recovered, a number of hospitals and lazarettos were established there. It was observed that the nurses, and those employed in the hospitals, did not contract the disease, in spite of the contagion. The principal remedies which were employed at this epoch were iced water, the bark, musk, and the vegetable and mineral acids in large doses.

I can recommend nothing more useful and efficacious in such cases, than to remove from those places where these epidemics prevail, and to choose a place where the air is more healthy. With respect to soldiers, every time that a disease threatens to spread itself amongst them, a circumstance very common in Lower Egypt during the unhealthy season, it is very important to remove the camp to a healthier situation, and to have the garrisons relieved by troops coming from healthy quarters, and then send the former to places where the disease has not been. There they lose the predisposition which they had to contract the disease,

while the troops which shall have relieved the garrisons will not contract it so easily, because they will not have that predisposition; and every time that the health of these new troops shall become impaired, they ought, without delaying on any pretext, to be relieved in their turn, even if it should be by those who were there before. In order to prevent all suspicion, and avoid all danger of carrying the disease where it has not been before, they should take nothing with them but their necessaries; they should avoid as much as possible halting in villages, and each time when they happen to encamp, they should expose all their baggage and cloaths to the air, which would not fail of dispersing every principle of contagion, and setting at ease the minds of those who are timorous. By thus changing successively the garrisons, we should preserve in good health a whole army, even in places the most infected. When the rains shall have ceased, the heats of summer returned, and the marshes have dried up; in a word, when the season shall have changed, and

every place become equally healthy, we may then leave off these useful yet troublesome marches and countermarches.

During the expedition to Syria, the general of division Dugas, commandant of Cairo and Lower Egypt, being informed that the plague existed amongst the garrison of Fort Birketalagi, immediately stopt its progress, by sending the garrison to Cuba; there the soldiers, respiring a pure and wholesome air, recovered their health in a few days, and the troops just arrived at Birketalagi, preserved themselves in good health, the more easily, by paying a proper attention to cleanliness. This prudent General had before observed at Damietta, the advantages resulting from this measure, as the following letters which he wrote to General Bonaparte, the 17th and 24th Nivose, 8th year (8th and 15th March 1800), bear testimony.

"*Damietta*, 17 *Nivose* (*8th March*).

"The second demi-brigade of light infantry is affected with the prevailing ma-

lady, more particularly than the others: this same regiment was also severely attacked at Menzaleh with another fever, which obliged more than two hundred men to enter the hospital. A battalion of the 65th went to relieve them; they have inhabited the same barracks, and occupied the same posts, during twenty-five days, and have not had a single sick man. Only one officer has had the prevailing fever, and he has recovered. I am convinced that this disease takes its origin from the bitter coldness of the nights, and that it is the consequence of checked perspiration, a cause which, acting on several individuals at the same time, gives to the disease a contagious appearance, which vanishes on a closer examination."

In his letter of the 24th (15th March), he proposes to send to Mansoura the companies of the second demi-brigade for change of air, the quarters which they occupied at Damietta being unwholesome, and their spirits dejected by a prepossession which it was necessary to do away.

As soon as the second demi-brigade was on its march for Syria, forming part of the division Kleber, it became perfectly healthy; whereas at Damietta it had furnished five sixths of the sick in the hospital.

I have also remarked, that it is even useful for the troops to march from one place to another, although both quarters happen to be equally infected. How often have I not seen soldiers who, on seeing their comrades dying, fled from Gaza, although they themselves had the fever and buboes! These patients, at the time of their leaving the hospital, were scarcely able to hold themselves upright; but, after having got some leagues into the desert, their strength returned, and they arrived at Jaffa in better health.

After having rested themselves some days, I advised them to continue their route towards Acre, in order to give rise to a greater change in their physical and moral constitution. It was thus that Citizen Marillac, officer of artillery, recovered, who was not able to get well in

Jaffa: he was become so feeble, so meagre, and so much disfigured, that his friends could hardly recognise him. In this state of debility he endeavoured to travel to the camp at Acre. Having arrived there, he received orders to return to Jaffa, with some troops appointed to take charge of a convoy of ammunition, and pieces of artillery. In a little time, he regained his good plight, and former colour. Change of place and air, in diseases of debility, and particularly in epidemics, has been found useful at all times; and, I will even add, however severe the symptoms, however advanced the disease, or weak the patient may have been. This is so true, that I have actually seen men recover, who had not, to all appearance, two hours to live. Of this fact, those who assisted at the evacuation of the hospitals in Syria, were witnesses. It would be impossible to conceive the importance, or appreciate the advantages resulting from this measure, if one had not had the means of judging of it by experience. Whilst the disease was mak-

ing the greatest progress at Alexandria and Rosetta, the soldiers of the naval legion escorted, for a long while, the caravans which went by land. They all enjoyed the best health during this active service; but scarcely had they become stationary at Rosetta, when more than two thirds fell sick. This fact is well known, and particularly by General Martinet, who then commanded that legion. I am persuaded, that if those men had, instead of remaining at Rosetta, crossed the desert to go to Cairo, or elsewhere, they would all have been preserved from the disease. The Bedouin Arabs, wandering in the deserts, are never attacked, notwithstanding their communication with the infected cities, during the time of the most dreadful plagues.

How many individuals, on the return of the army of Syria to Egypt, recovered their health in the desert, even at the distance of a few leagues from Acre, from Kaiffa, from Jaffa, and from Gaza. If they had remained a few days longer in these

cities, they would, in all probability, have fallen victims to the disease.*

* General Damas, severely wounded in the mountains of Mont Tabor, by a ball which had broken the humerus near its articulation with the fore arm, was removed to Jaffa, and lodged in the house of the fathers of the Holy Land. The accidents following upon this wound were very severe, and several times endangered the loss not only of the arm, but the life of the patient. This General, during the times of dressing his wound, was supported by his valet de chambre, who, without any bad design, kept concealed a pestilential bubo, which he then had, and continued in that state for two days to wait upon his master. There were at the same time in the house four persons attacked with the plague, two of whom died, which made General Damas determine to dismiss his servant, and change his lodging. I had him removed to the most elevated part of the castle of Jaffa, in order to avoid the damp air as much as possible. In spite of this, his wounds, which had before showed every appearance of healing, shortly took on a bad aspect, and I observed him from day to day contracting the predisposition to the disease. The fear of seeing him die of the plague, determined me to advise him to quit Jaffa. From the second day of his being at sea, all the symptoms of the plague disappeared, and his arm healed; he can now make use of it as well as formerly. He has since been nominated

It is a fact, that some of our sick soldiers in Syria, on seeing the departure of the army for Egypt, endeavoured to follow it on foot; and although from their debility, they fell several times on the ground, they got up again, and contrived to follow the columns until their arrival in Egypt, where they recovered their health.

Citizen Mechaud, chief of a battalion of engineers, communicated to me the following fact, which happened whilst he commanded at Katie. Some soldiers, on their return from Gaza with a convoy, discovered at a distance a French soldier wandering amongst the sands, about two leagues from the fort; they went up to him, and found him with a bundle of sorrel under his arm: this man had been attacked with the epidemic disease, and during his delirium, had run off from the hospital. During the fifteen days which followed, he had taken no other nourish-

general of division, and chief of the *etat major general*, and performed the glorious campaigns of the year 8 against the army of the Grand Vizier.

ment but sorrel, and he recovered perfectly. I have seen this plant in several places in the desert, its leaves scarcely raised above the sand: on pulling it up by the roots, it presents a weak means of diminishing the burning thirst of the traveller.

Of the means which might be employed in Egypt to destroy the epidemic fevers.

Before speaking of the means which might contribute to render Lower Egypt as healthy as the finest countries of Europe, it will not be useless to premise some topographic medical notions of Alexandria, Rosetta, and Damietta; in which cities every year epidemic fevers break out.

Alexandria is a city celebrated in ancient history, situated at 31° 13′ 5″ northern latitude, and at 27° 35′ of longitude from the meridian of Paris. It is washed by the sea on the west and the north, and on the east and south are situated the lakes Mareotis and Madiez. Rosetta is situated

at 28° 8′ 30″ of longitude from the meridian of Paris, and at 31° 25′ 20″ of northern latitude. It lies about two leagues from the sea, upon the left bank of the Nile: to the eastward, on the other side of the Nile, there are a great number of flat grounds, which, after the inundation of the river, form very numerous and extensive marshes.

Damietta, the third celebrated city on the coast of Egypt, on the eastern bank of the phatnitic branch of the Nile, lying in 29° 29′ 15″ of longitude from the meridian of Paris, and 31° 25′ 43″ of northern latitude, has the sea and the lake Menzaleh to the north, and is divided by the Nile. The fields of rice which surround this city, contribute to infect the air; besides, there are several lakes, pools, and marshes in its environs, which render it very unhealthy. Senanieh, among others, is a village remarkable for its insalubrity.

The heavy rains which fall during the winter at Damietta, at Rosetta, and Alexandria, contribute greatly to produce diseases, which the south winds, the fogs,

and exhalations of the marshes render more dangerous. It is asserted, that these diseases are more frequent when the inundations of the Nile are high, and of long duration. The inundation of the year 6 (1798) was one of the most considerable; notwithstanding which the disease did not show itself but in those cities on the coast of the Mediterranean.

The other cities of the Delta, Boulac, Cairo, Gizèh, and the whole of Upper Egypt, were preserved from it. In the fort of Birket-El-Agi alone, a few deaths happened from a suspicious disease, which, in my opinion, without having recourse to contagion, were occasioned by the evaporation of the stagnant waters of the *Lake of the Pilgrims*, so called on account of the meeting together, at this spot, of the grand caravan, which every year sets off from Cairo for Mecca. The putrefaction of the aquatic plants, and of the immense quantities of fish in this lake, contributed to its developement.

In the ancient histories of Egypt, there is no mention made of the plague. The

former inhabitants of this celebrated country either did not distinguish this disease from others, or were unacquainted with it.

It is certain that Alexandria, Rosetta, and Damietta, as well as the whole surface of Lower Egypt, are so much changed, that formerly these places might have been the most healthy parts of Africa. The ruins of entire cities, destroyed and overwhelmed; the majestic remains of ancient monuments, preserved in spite of the overthrowing action of time, which at this day are in part submerged and surrounded by water, are sufficient to prove the revolutions which this part of the globe has undergone. The profound and interesting researches made by General Andreossi, and by the respectable body of philosophical men and members of the French Institute in Egypt, are worthy of examination: they are preserved in the Egyptian decade.

At this day the lakes, the marshes, and the filthiness which one finds in the cities of Lower Egypt, are the principal causes of the frequent diseases to which they are

subject, and which can never be eradicated until we have found means to purify the atmosphere of their environs. This important advantage may be obtained by draining off the waters of the lakes, and filling them up; by keeping the cities clean, paving them, and giving a free exit to the rain water, which, stagnating in different parts of these cities, becomes corrupted, and, conjoined with filths, infects the atmosphere. By similar operations, several cities and provinces in Europe, America, and the Indies, have been rendered healthy. I have no doubt that the salubrity which we at this day enjoy in France and Italy, is the result of the amelioration of agriculture, and the perfection of the arts.

Of the Seclusion of the Franks during the time of the Plague.

When the Franks residing in Egypt are assured that the plague has broken out in the place where they live, they retire into their houses, shutting all their doors, and having no intercourse with any one

until the 23d of June, the eve of St. John. Not only are their doors closely shut, but they block up with care even the smallest holes, in order to prevent any animal entering their dwelling; and if by chance a cat should creep in, they immediately pursue and kill it. For this purpose they have loaded muskets always in readiness, and springes set in the suspected parts of the house. The cats of the family are shut up in cages, like fowls; and if, unfortunately for them, they chance to leave their prison, and make their escape, on their return they are killed without mercy, according to the *sanitary laws;* in case they should, during their absence, have contracted the poison of the plague, and brought it home attached to their tail, or hair of their skin. In the lower court, or near to the gate of the house, they place three large earthen vases filled with water, a bason with vinegar, a furnace with coal, some odoriferous herbs, antipestilential powder and pastes, iron pincers, a large knife or stiletto, and some other utensils used for destroying the

poison of the plague. Each family has a Turkish domestic, who is not comprised in the *shutting up*, and who is employed to transact all commissions: this man comes every morning to his master's house with the necessary provisions, which he has bought at market. The porter, who is generally the steadiest person in the family, and the most strict observer of the *sanitary laws*, after having reconnoitred the domestic, descends with the key in his hand, opens the door, and retires to the top of the stair-case, in order to avoid all risk of contagion from the servant, who, entering into the court, puts the provisions, such as meat, fish, herbs, and fruit, into the vases full of water. If he has money, he puts that into the vinegar; if papers of importance, such as bills of exchange, invoices, &c. he puts these near the furnace; and after he has heard from a distance the porter give him his orders for the following day, he withdraws. The porter follows, and shuts the gate of the house: then, after having taken in his hand a kind of magic ring, he stirs about

in the water the meat, the fish, and the herbs, in order to drown and destroy the pestilential poison. He then takes the money out of the bason of vinegar, and, having lighted the coals, he throws on them some powders and perfumes: afterwards, with the pincers, he takes the papers, and places them over the furnace, where they remain at least for two hours in the smoke: by this method, in their opinion, they are freed from all poison, and may then be touched without communicating the plague. They likewise purify sealed letters, and other papers, by piercing them with the stiletto in two or three places, and dipping them in the vinegar. The linen and other cloaths washed out of the house may be admitted without any risk, provided they be still wet. The bread prepared in the house, and sent to the oven to be baked, may be received without any precaution, provided it has never been touched as long as it was hot. Tobacco, pulse, sugar, coffee, and every thing which, in the lazarettos, is called a *substance not contaminating* (substance non

contumace), may be admitted without precaution into the *insulated* houses. The contaminated substances are absolutely banished the house till the 23d of June, the day when all danger of the plague ceases, whatever may have been its violence. The inhabitants of the Levant have a general belief that the eve of St. John puts a limit to the plague; and at this epoch they leave their cloisters, embracing and congratulating each other on having escaped the scourge.

Of Lazarettos and Quarantines.

Lazarettos are large buildings situated commonly on the sea beach, at a little distance from the harbours, consisting of lodgings, hospitals, magazines, and very extensive inclosures, and including a portion of the roadstead, or harbour, capable of containing a certain number of vessels.

These lazarettos are destined to receive and retain, for a limited time, passengers and ships-crews, merchandize and vessels

coming from places where the plague is raging, so that they may have no intercourse with any one whatever, till the termination of the quarantine.

Quarantines are divided into quarantines of rigour, and those of observation. Quarantines of observation never exceed fifteen days, and are never less than five: quarantines of rigour consist of thirty-nine days, or forty, computing from the day of commencing.

Such vessels as come either from the coast of Africa, in the Mediterranean, or from any seaport town in the Levant, are put under quarantine; that is to say, they sail into that part of the roadstead, or harbour, which is appropriated to the lazaretto; after which, the captain of the vessel presents to the board of health *(bureau sanitaire)* his certificate of health, in which are specified his destination, the day of his departure, the names of himself and his vessel, the cargo, the number of his crew and passengers, and whether, in the place from whence he came, there were any instances of the plague. This

certificate is taken through a grating by means of a pair of long pincers, and is not read until it has been thoroughly perfumed, and dipped in vinegar. If the certificate gives notice of the plague, the vessel is considered foul *(brute)*; if, on the contrary, it states that, for some time past, there has not been an instance of the plague in the place from whence she sailed, she is considered clean *(nette)*; if it was only a short time since the plague had ceased, she is considered suspected *(suspecte)*. In the first case, the passengers and ship's-crew are strictly reviewed at a distance; and although every one of them should enjoy perfect health, they are all placed under a quarantine of rigour. When the certificate is *clean*, the quarantine lasts a shorter time; and in the third and last case, it is a quarantine of observation, which lasts a longer or shorter time, according to the decision of the conservators of health.

If any vessel, before entering the harbour, has been visited by a vessel from the coast of Africa, or from a seaport in the

the Levant, or belonging to an enemy, she is placed under strict quarantine, even if she had come from the nearest port; as, according to the sanitary laws, her certificate is considered foul *(brute)*.

When merchandize is put under quarantine, it is deposited within the inclosure, or in the magazines appropriated for that purpose. The establishment for this end, at Marseilles, is very beautiful, of prodigious extent, and shows the importance of the commerce which France carries on with the Levant. The passengers are put on shore, and sent into the inclosure with one or more guards of the committee of health *(comité sanitaire)*, while the ship's crew remain on board, with some others. The porters, and those persons employed to purify the merchandize, in order to ascertain whether or not the bales of wool and cotton contain the vapour of the plague, open them in the middle, and thrust in their bare arms, believing that, if they contained the plague, the disease would without fail show itself on them. They break open the chests and trunks,

and expose to the air the bales of flax and of silk, the cloths, sails, stuffs, and, in short, every article on board. They pretend in this way to facilitate the evaporation of the pestilential fomes, which perchance might have been brought in along with the merchandize. At length, after having exposed every thing day and night to the air for the space of thirty-nine days *(sérène)*; after having, in the course of the quarantine, perfumed the passengers, the ship's-crew, and the vessel, three times, they permit them to enter the harbour.

If, during the time of the quarantine, any one falls sick and dies, should the cause of his death be suspected, the quarantine is prolonged, and sometimes it recommences, and this every time such an accident happens.

When the death of several persons on board puts out of doubt the existence of the plague, and that it is making progress instead of diminishing, the laws of health condemn the vessels, without any reserve to the flames. Those who compose the crew, after being stripped of all the

cloaths, and having their whole bodies shaved and washed in sea water, are admitted into the lazaretto, in order to undergo there a rigorous quarantine. The vessel, with its merchandize, is towed out to sea, where it is either sunk or committed to the flames. If the porters employed to purify the merchandize are attacked with the plague during the quarantine, or some days after that operation, the committee of health pronounce the goods infected, and, without delay, cause them to be burnt or sunk.

It has often been said, that in breaking open a letter, or in opening a bale of cotton containing the germ of the plague, men have been struck down and killed by the pestilential vapour. I have never been able to meet with a single eye-witness of this fact, notwithstanding the enquiries which I have made in the lazarettos of Marseilles, of Toulon, of Genoa, Spezia, Livournia, Malta, and in the Levant. All agree in repeating, that they have heard of such an occurrence, but that they have never seen it happen. Among those whom

I have interrogated about this fact, I may name Citizen Martin, captain of the lazaretto of Marseilles, who, for thirty years past, has held that situation: this brave and respectable man told me, that during that time he had seen opened and emptied some millions of bales of cotton, silk, furs, feathers, and other goods, coming from several places where the plague raged, without having ever seen a single accident of the kind.

Observation, necessity, and experience have taught that all substances which are necessary to life, are not equally susceptible of imbibing the pestilential poison; that there are even some which are not susceptible of contracting it, and which consequently cannot communicate the plague.

The substances liable to communicate the plague, are called *contaminating*, while those which cannot imbibe this poison, are called *non-contaminating*.

I think we may distinguish three classes of *contaminating substances*. For example, wool, cotton, silk, hemp, stuffs, hides, all

kinds of hairy skins and furs, are contaminating substances of the first class. These substances do not lose their infectious qualities until after forty days exposure to the air *(sérène)*.

There are goods which, in order to purify from the poison of the plague, it is sufficient to put in vinegar, or in perfumes: such are papers, as well as samples of stuffs, &c. which I rank in the second class.

Gold, silver, and all the other metals, porcelain, delft ware, and glass, although they are non-contaminating substances, may contain some foreign body, charged with pestilential poison, if they have been handled by infected persons; and they ought to be put in water, as well as fresh fish, meat, herbs, fruits, and all kinds of animals having hairy skins. I consider these substances as contaminating of the third class; fresh, or sea-water being perfectly sufficient to destroy any of their contagious properties.

Wax-cloth and stuffs, when they are wet, do not communicate the plague.

Every kind of wood, straw, hay, flowers, osiers, matts, provided no hempen or cotton threads enter into their texture, wax lights and candles, provided the wick be burnt to the level of the wax or tallow, ivory, mother of pearl, wheat, seeds, tobacco, coffee, sugar, pepper, and aromatics, salt, oil, and liquors, are not liable to imbibe, nor to communicate the plague.

These principles being established, the officers of health prolong, abridge, or modify the quarantine, delivering or detaining for a longer or shorter time the persons and goods in the lazarettos.

It follows from these principles, acknowledged by the offices of health, that you may inhabit the same house, the same vessel, the same chamber, walk together, sleep upon the same beds, or the same mats, and keep company with persons under quarantine, even whilst they are attacked with the plague, provided you do not touch them neither directly nor indirectly. You may take snuff offered you by a person having the plague, provided the box be of wood or of shell. There is no

danger even in breaking bread with them, provided the bread be cold; for if it were warm, it might communicate the plague. How then is the reason of all this to be explained? Those who wish to have the fullest details upon lazarettos, quarantines, the manner of purifying contaminating substances, and to acquire the fullest ideas on the subject of the plague, should consult the codes of health at Marseilles, at Toulon, and at Venice. They will also find, in a work of J. P. Papon, *ci-devant* historiographer of Provence, printed at Paris in 1800, the memorable epochs of the plague, from 1491 before the birth of Christ, till that of Marseilles in 1721 of the Christian æra. They will there learn the means which are proposed for preventing this disease, upon the frontiers of a country which it is ravaging, as well as the precautions to be adopted in cities having the plague. There is also a good deal said of the purification of goods, of houses, of preservatives, of lazarettos, of the police of sea ports, &c. Had I not predetermined to state nothing but the

observations made by myself in Egypt and Syria, I should have added a few reflections on the work of this author. I however reserve them till a future occasion, when I mean to analyse this disease more at length.

On an unprejudiced examination of the works of writers on the plague, we find nothing but frightful recitals of what happened in the epidemics which they have described. They all insist on the necessity of quarantines, and forbid the inhabitants, under pain of death, to quit their houses, whenever there has happened any death by the plague; believing that this means will suffice in stopping its progress. It is not difficult to conceive that the shutting up together of several people in good health, and some sick, and obliging them to breathe the same air, which every day becomes more and more infected, must augment the disease of those who are already sick, and expose the others to contract it. Experience has proved that these seclusions, or shuttings up *(renfermemens)*, have never succeeded in arresting the pro-

gress of the plague. This disease always commences by attacking the poor in the most unwholesome quarters of the city; after which the health of the inhabitants in good circumstances becomes impaired, and at length death levels indiscriminately the poor and the rich. Then, all becomes confusion in the city: the magistrates are no longer able to maintain their authority, the shuttings up cease by little and little, the season changes, the atmosphere becomes purified, those who have escaped recover strength and courage, and all at once the epidemic ceases. This is what has been observed in all plagues, but particularly in that of Marseilles, in 1721. The history of these epidemics strikes one with horror; and, after comparing them with the most malignant plagues of the Levant, where the shuttings up are only in use amongst a very small number of individuals, I have no hesitation in declaring, that in Europe the mortality has been the greatest. It is generally thought that the principles of fatalism of the Turks contribute greatly to increase the propa-

gation of this disease amongst them, because they will not make use of any precautions. This much however is certain, that the Mussulmen, during the plague, attend on their sick with particular care even to the last moment of their lives; whilst, on the contrary, our sick are separated from the rest of the family, and abandoned to their unfortunate lot, the mother even refusing to carry assistance to her own son during the agonies of death, and the husband not daring to approach the dearest object of his affections, who requests from him a drop of water in a voice the most tender and supplicating. A like inhumanity has place neither in Asia nor in Africa; and if I were doomed to be attacked by the plague, I should by far prefer being in the hands of the Turks, than in those of the Europeans.

Si quid novisti rectius istis,
Candidus imperti; si non his utere mecum

REFLECTIONS

ON THE

EPIDEMIC FEVER

Observed in the Ligurian Republic, and in the Hospitals of the Army of Italy, in the Year 8 (1799-1800).

THE analogy and affinity which all epidemic fevers bear to each other; the facility with which an alarm is propagated as soon as one of these dreadful diseases discovers itself in any city or province, has induced me to state here my opinions upon a peculiar epidemic fever, which alarmed the inhabitants of the environs of Montpellier, during the first months of the year 8 (1799-1800). See the Journal de Medecin, page 373.

An epidemic disease spread its ravages in the hospitals of the army of Italy, and carried off daily its numerous victims. Flying report, which always magnifies every danger, and attenuates every good, spoke of nothing but the number of deaths: already even the name of the pestilential disease spread dismay far and wide. In this alarming situation, the public authority thought proper to consult the school of medicine of Montpellier, which hastened to calm their inquietude, and reanimate their spirits, by proving that this fever, falsely regarded as pestilential, was not at all different from the fever of hospitals, the *typhus carcerum* of Pringle, or the fever of camps and armies, *febris castrensis:* and, as a mode of preservation, they recommended a generous strengthening regimen, great cleanliness, pure and frequently renovated air, and a state of mind exempt from fear and inquietude.

On my return from Egypt to France, I arrived in the gulf of Jouan the 25th Prairial of the year 7 (14th June 1799),

and I collected the particulars of the epidemic which had just carried off a great number of the inhabitants, and of the soldiers in the environs. It was the same as that which we have just been describing; and it was observed during this epidemic, that the inhabitants residing near the sea were more exposed than those who were at some distance; and that there were several villages situated on the heights, which had not even a single sick person.

With regard to this disease, the majority attributed it to the rains and the fogs. A citizen of the environs of Antibes assured me, that if this disease had taken place some months before, it would, without fail, have been attributed to the vessels just arrived from Egypt, and which had put ashore at Frejus without performing quarantine. A similar epidemic, probably the same, showed itself in the hospitals of Genoa some months after; and it was stated in the public papers, that a physician of that city had refused to go and take charge of the sick of the hospital, for fear of the contagion. I am led to think

that this citizen was reading at the time the work of M. Papon, in which are related the particulars of the plague of Marseilles. If I were to give advice to medical officers employed in treating epidemic diseases, it would be to banish melancholy and fear, to live well, and avoid all excess; and if they are fond of reading, to choose amusing books in preference to those which treat of the plague.

REFLECTIONS

ON

THE YELLOW FEVER OF CADIZ,

IN THE YEAR 1800.

IN treating of the disease of Egypt, known by the name of the plague, and of the epidemic fever, observed during the year 8 (1800), in the bay of Genoa, at Nice, and at Montpellier, we have seen with what facility we are deceived with regard to the nature and causes of these diseases. When a dreadful epidemic breaks out in any city or province, we without fail have recourse to some peculiar poison, imported from distant countries. Hence, some have made the yellow fever come from Palestine, and others from the West Indies.

Amongst the authors who have written on this disease, some say that it spreads it-

self by contagion; others, that this happens but rarely. (See Hillary's Description of the Yellow Fever which prevailed at Barbadoes.) There are even some physicians who maintain that it is no wise contagious. In the Journal de Medecin of Paris, in the year 9 (1801), Citizen Hallé, professor of the school of medecine, has given us the history of the yellow fever of Cadiz. As we have been treating of an epidemic which may have some affinity with other diseases of this nature, I may just be permitted to mention here its principal features, and to add some reflections and queries, which may perhaps tend to procure us some more distinct ideas of this disease.

Symptoms.

From the 10th to the 15th of August, in the year 1800, there broke out in the quarter of St. Mary, at Cadiz, a fever, which, in the end, ravaged this city in a short time: it had the character of a slow nervous fever. In the supplement of the

Gazette of Madrid, we read, that some corsairs and sailors, consisting both of strangers and natives, brought this disease into a single family in this populous part of the town, and that from thence it communicated itself to all those who had any intercourse with them, and afterwards spread itself to all the other quarters, attacking indiscriminately all classes of the inhabitants of this city.

Causes.

With regard to the cause of this disease, the author of the Journal de Medecin thinks that it certainly was not caused by the importation of any contagion. He thinks, with reason, that fear and terror, and the long continued heats of a burning summer, preceded by heavy rains, and followed by a very warm easterly wind, which lasted forty days, and which made the thermometer of Fahrenheit mount to 85 degrees, might, in the end, have facilitated and rendered more rapid the course of this disease, called the *yellow fever*, on

account of the yellowness which supervened. It began by shiverings, accompanied by general uneasiness, and a bilious vomiting of a yellow or green colour, stools of the same nature, loss of strength, quick pulse, burning skin, heavy pains in the head, temples, and orbits, pains in the loins, the bones, and superior orifice of the stomach. If these symptoms continued increasing until the fourth or fifth day, the patient was in jeopardy: the yellowness supervened, accompanied by subsultus tendinum, petechiæ, and hiccough; the vomitings and stools became bloody, blackish, and fœtid; the extremities cold; and all the symptoms of putridity appeared. If, on the contrary, the sick felt some relief on the first days of the disease, there was then reason to look for their recovery: the yellowness, hemorrhages from the nose or the fundament, were not bad symptoms, provided vomiting or hiccough did not supervene. Some patients were observed to have phlyctenæ, and swellings of the parotids; and others had phlegmo-

nous tumors, which were terminated by gangrene.

The dissections of several dead bodies showed bilious collections in the liver, the gall bladder distended, the gall ducts obstructed, and in general an erysipelatous inflammation of the abdominal viscera, and very frequently gangrene of the intestines and stomach.

Method of cure.

Several patients, who were slightly attacked, were cured by a little of the acidulous tartrite of potash, some decoction of bark, slight sudorifics, lemonade, and nitrous drinks, not omitting glysters, and some gentle laxations. In the more severe attacks, vomits on the first day of the disease were employed ;* the second day bark

* Citizen Hallé has with reason remarked, that almost all those who have seen the yellow fever in the West Indies, have dreaded emetics, as augmenting the irritation in the stomach, exciting vomitings which could not be stopt, and hastening the gan-

was administered, in order to prevent the exacerbation on the third; whey, with a little syrup of borax, or nitrous æther, was added to the tisans, and advantage was derived from glysters of decoction of tamarinds, or decoction of bark. In order to moderate the vomiting, and calm the hiccough, they gave camphor emulsion in large doses; emulsion, with lemon juice, in particular was most successful in stopping the hiccough. In the hemorrhages they made use of the sulphuric acid, sufficiently diluted, but in repeated doses. Blisters produced the best effects during the comatose state.*

In those cases where, with the yellowness, a bilious diarrhœa came on, they administered a laxative tisan made from tamarinds. If the evacuations were accompanied with fainting fits, they gave the

grene of this viscus. (See Roupp, Bruce, Lind, Hillary, &c.)

* Hillary says, that blisters, so far from being useful, augmented the comatose affection, the trembling, subsultus tendinum, coldness of the extremities, and hæmorrhage.

patient a few spoonfuls of a cordial mixture, with some vitriolic æther mixed with water of linden tree flowers; the burning heat in the intestines was moderated by emollient, oily, and anodyne glysters. In the worst cases they employed the decoction of bark with vitriolic æther, opium, the liquor anodynus, &c. Sometimes a violent fever showed itself, followed by fits of intermission; and although the bark prevented the attack on the following day, the patient was destroyed in a very short time. This circumstance recals to my mind a case nearly of the same kind, which occurred to me whilst I was physician and surgeon in chief of the Duke of Modena's body guards. M. Volpi, a young man belonging to the corps, of a very robust habit, not being able to void his water, endeavoured to introduce into the urethra some thick violin string, which irritated the prostate and passage to such a degree, that a considerable swelling of the yard followed, accompanied with inflammation. The case was so severe, that I called in consultation one

of the physicians of the city, who considered the patient to be attacked with an intermittent fever, and persuaded him to take bark in large doses, in order to stop the double tertian, which was merely symptomatic, arising from the inflammation of the urinary passages, and followed exactly the course of a true fever of suppuration. The physician gave himself credit on seeing the patient free from fever, but the gangrene made such a rapid progress, that death followed when we believed him out of danger. It is clearly to be perceived, that bark was not the most appropriate remedy in such a case, and that its tonic action only augmented the disorder, particularly as it was administered at a period of the disease when the irritation and state of the patient required emollients and refrigerants.

It appears evident to me, that the yellow fever of Cadiz, in spite of its resemblance to the slow nervous fever, had at times the inflammatory character; and it is not surprising that the bark then hast-

ened the gangrene, by augmenting the inflammation.

Means of prevention.

At the breaking out of the disease at Cadiz, the common sewers were ordered to be cleansed, and the dead bodies buried without the city. An hospital also was provided for the soldiers and sailors, at some distance. These means could not fail of being very proper, and much more useful than watering the doors of the houses, than the smoke of the branches of green pine burnt in the public squares and streets, the fumigating and sprinkling the houses with aromatic vinegar, and the firing off of gunpowder in different quarters; means truly of small avail in purifying the atmosphere of a city, such as Cadiz.

Queries respecting the Yellow Fever which appeared at Cadiz in the year 1800.

1. Is it quite certain that this disease was the yellow fever?

2. Is it sufficiently proved that it was contagious?

3. Is it a certain fact that the corsairs and sailors brought this disease into Cadiz?

4. What are the circumstantial details which prove these assertions?

5. The heavy rains of the spring, the excessive heats of the summer, the hot and constant easterly winds, the hardships which the inhabitants had experienced, and were still suffering—were these not sufficient causes to give rise to a disease dreadfully epidemic, contagious, and mortal?

6. What were the means employed for arresting its progress?

7. How were the means of curing and destroying it discovered?

8. If it was contagious, how came its progress to be stopt amongst that class of

people who possessed neither the means nor the possibility of avoiding the contagion?

9. If it was evidently contagious, how came it not to be communicated at other times when there were received into Cadiz without precaution, persons recently convalescent, and perhaps attacked with the yellow fever, coming from Carolina and Philadelphia? If a predisposition be requisite to produce it, the disease then cannot be eminently contagious.

10. The influences of seasons, times and situations, are equally fatal to all, and not more so to the poor than to the rich. The effects of contagion, on the contrary, may be prevented by persons possessing the means of preserving themselves from it. As to the poor, it is impossible for them to avoid it, particularly if they have any sick amongst them.

11. Was the number of deaths known?

12. Was it as considerable as is reported?

Sæpè fama crescit eundo.

ON THE DYSENTERY.

THE dysenteric flux attacked a great number of our soldiers in Egypt, at the beginning of autumn, in the year 6 (1798), that is to say, when the coolness of this season began to moderate the excessive heats of summer.

Obstructed perspiration was the chief cause of this disease. It is well known that when the pores of the skin are closed up, the fluids are carried to the intestines, and give rise to diarrhœa. *Cutis stricta, alvus laxa est.*

Sanctorius has proved to us, that of the eight pounds of nourishment which a man takes during the twenty-four hours, he loses five by perspiration. If this perspiration happens to be stopped by any cause whatever, derangements in the animal functions must necessarily follow. Expe-

rience has shown us that it is to the intestines the fluids are carried, and produce diarrhœa.

This disease showed itself on the majority of our soldiers a very short time after their arrival in Egypt. We have said, in the Introduction, that the nights were cold and damp, and that the men took no precaution to guard against their bad effects. Hence, amongst other inconveniences which necessarily followed, our troops were first attacked with diarrhœa. The *pastèques*, or water-melons, the milk, and the water of the Nile, which our soldiers drank in too great quantity, contributed to keep up this excessive evacuation. In several individuals, the diarrhœa degenerated into the white dysentery; and it was not unusual to hear the patient say, "My stomach does not now digest my food, for it passes in the same state as when I take it." They did not suffer any cholic pains, and very few made use of any remedies for its cure. The frequency of the stools did not fail to irritate and heat the extremity of the rectum. This

excoriation was nothing but the effect of the quantity, and not the quality of the stools, as the slight inflammation which attacks the nostrils in coryza is owing to the quantity of lymph which flows over the parts, and not to its acrimonious quality, as some suppose.

Besides the fluids of perspiration, which are carried to the intestines, the bile flows in a greater quantity into this canal, the stomach loses its strength, and the gastric juice becomes less powerful, or when scarcely secreted, flows into the intestinal tube, on account of the over increase of the peristaltic motion. This derangement of the stomach must of course produce bad digestion; and the half digested food must give rise to the disengagement of a quantity of air. It is to this particular gas that I attribute the first cholic pains which the sick experience. In this period of the disorder there supervenes, in my opinion, on the irritated parts, some slight inflammations upon different spots in the intestines, and segments of the internal coat are in some points detached, whence there

follows the mucous or glary dejections, which many persons call the grease of the intestines.

When the diarrhœa has arrived at this second stage, it is then become dangerous, and requires to be treated in the manner we shall now point out.

If we neglect to use the means proper for checking the progress of this disease, it very soon becomes a true bilious fever, accompanied with very frequent stools, requiring very considerable efforts to void a quantity of glary and often bloody matter. Several of the sick in this state, weary of following the advice of physicians, tried to arrest the course of their disorder by eating hard boiled eggs, sprouting beans, and other remedies, considered as specifics. A great weight at the stomach, burning thirst, bilious vomitings, stools of a blackish colour, putrid, and of an insufferable stench, were soon the consequence of this bad practice. But still, hoping to be cured in twenty-four hours, they preferred going on taking a load of medicines, directly contrary to each other, which were given

them by quacks; and in this manner completely dissipated the little strength they had left.

After this statement it is easy to be perceived that I distinguish three stages in the dysentery of Egypt. The first stage is the simple flux, or diarrhœa; the second is when it is accompanied by cholic pains, and mucous evacuations; and the third, when fever shows itself, and the evacuations become bilious, putrid, and bloody.

Treatment and Means of preventing this Disorder.

The indications which present themselves in the treatment of the dysentery, vary according to the different stages of the disease. In general, in the simple flux it is necessary to facilitate the evacuation of the putrid or vitiated matter contained in the stomach and intestines; to diminish the great sensibility of these parts, and to re-establish the obstructed perspiration. In order to facilitate the evacuation of the

putrid and vitiated matter in the stomach and intestines, I constantly prescribed an emetic in the morning. I preferred ipecacuan to the tartarised antimony; and in the evening I gave the sick an anodyne draught, with twenty drops of the liquid laudanum of Sydenham: I recommended to them at the same time to keep themselves well covered, and I afterwards made them take some boluses of diascordium, the white decoction for ordinary drink, some rice and sheep's-trotters for food. The oranges and pomegranates, fruits in great abundance in this country during the season when this disorder prevails, were very useful in quenching the thirst and refreshing the mouth, without relaxing the stomach and intestines, as watery drinks are apt to do. Afterwards, the conserve of orange peel, preserved with sugar and not honey, coffee, and a little Cyprus wine, contributed greatly to strengthen the functions of the stomach.

When the evacuations had recovered their proper consistence, the patient was considered as cured: but if a too great consti-

pation followed, glysters were preferable to purgatives, since the slightest laxatives exposed the patient to a relapse. When the flux was accompanied with cholic pains, and the patient's stools were mucous and glary, I had recourse to injections of decoction of lintseed, poppy heads, of milk, of broth made from tripe and sheep's trotters, &c. &c. For a long time, and under different circumstances, I made use of a number of remedies, cried up, in that country, as specifics in the cure of the dysenteric flux; but I have never been able to collect a sufficient number of facts to convince myself of their good effects.

I am persuaded, that in order to treat this disease in the second and third stages, we must pay attention to the constitution and strength of the patients, in order not to irritate too much with tonics and astringents on the one hand, nor to relax them by laxatives and refrigerants on the other. I have seen individuals, to whom bleeding was of great utility: I have also seen others, to whom it proved quite the

contrary. Opiates have, in the course of twenty-four hours, cured some who had been long ill, without any inconvenience accruing afterwards; but I have seen the same class of remedies augment considerably the fever and cholic pains in persons of a meagre, delicate, and bilious habit. In this case lemonade, with the acidulous tartrite of potash, or the tisan made from tamarinds for drink, rice for food, and glysters of milk, produced the best effects. I am however persuaded, that the food of which the sick made choice, and the excesses which they committed, were frequently the chief causes which prevented their recovery.

When the dysentery, accompanied with fever, has arrived at its third stage, the fever ought to be treated as putrid, and the bilious evacuations accompanying it should not be stopt; but as soon as we can flatter ourselves with having evacuated all the bile, and other corrupted matter, by a moderate use of gentle laxatives, sometimes giving a weak decoction of rhu-

barb, at another small doses of ipecacuan; we ought then to have recourse to anodynes and opiates.

Citizens Desgenettes and Larray, chief officers on the medical staff of the army of the east, and all my colleagues, have acknowledged, in the treatment of this disease, the sovereign powers of opium, which, administered at a proper period, produces constantly the best effects.

I have not had occasion to make use of blisters, as I do not believe them to be of much utility. In order to quiet the pains in the abdomen, I have always preferred, in every kind of cholic, to have recourse to anodyne fomentations and tepid baths, when the strength of the patient admitted of it, according to the practice of Pringle, Lind, and other celebrated authors. These great practitioners, in order to dispel the pains, likewise made use of a blistering plaster applied over the abdomen; and Citizen Barbes, physician in ordinary to the army of Egypt, used to apply large blisters over the abdomen of several patients attacked with dysentery, of whose

safety he despaired, and in a few days they recovered. (See the Egyptian Decade.)

Several persons stopt the dysenteric flux by giving small draughts of decoction of the peel of pomegranate, three times a day, or still oftener. In Upper Egypt they make use of quinces seasoned with pepper, to stop the diarrhœa and dysentery. In Italy they boil this same fruit in a small quantity of water till it becomes reduced to a jelly, which they give with advantage by spoonfuls to the sick. In France it is given in the form of a conserve.

Amongst the remedies which the physicians of Cairo recommend for curing the dysentery, is a fruit from Sennaar, called *hao-bab*, or the monkey's bread. The rind of this fruit powdered and taken in small doses, frequently repeated, as well as the substance adhering to the seeds, which has a sourish-sweet agreeable taste, is extolled as a specific in the dysentery of Egypt. I myself made use of it at Cairo in several cases with advantage; and I found in the sweet powder of the *hao-bab*, an antiseptic as well as an astringent quality.

The means to be employed for preserving oneself from the dysenteric flux, consists in avoiding the suppression of perspiration, by sleeping in a well closed apartment, and by covering oneself thoroughly when forced to pass the night in the open air. It is very useful in Egypt, in order to prevent too great a relaxation of the fibres of the stomach, to mix with the Nile water, which serves for ordinary drink, a little brandy, in preference to vinegar. This precaution becomes the more necessary, if much use be made of lemonade. The want of wine is of great consequence to those who are habituated to that liquor. In Egypt they who substituted brandy and coffee in place of wine, enjoyed good health: those, on the contrary, who drank nothing but the Nile water in great quantities, and took a good deal of milk, greens, and watery fruits; who, in the evening and night, to enjoy the cool air, undressed themselves, or slept upon the damp ground; were attacked with dysentery; and when these individuals persevered in following this regimen,

they were soon under the necessity of applying for medical assistance. Doctors Bruant, Barbes, Savaresi, and Renati, physicians in ordinary to the army of the East, paid particular attention to this disease. (See their Memoirs in the Egyptian Decade.)

ON THE

OPHTHALMY OF EGYPT.

THE ophthalmy of Egypt is a true defluxion of humours which deposits itself either upon one eye only, or upon both at the same time. This disease is endemial, sporadic, and epidemic; and takes place principally on the approach of autumn. *Autumno lippitudines & oculorum fluxiones fiunt.* (Hippocrates.)

The ophthalmy of Egypt showed itself among the soldiers of the army of the East at the commencement of the year 6 (1798), and continued till the month of Frimaire (middle of November) in the year 7 (1799). More than two thirds of the army were attacked almost at the same time, which made the duty of the garrisons very se-

vere. This disease harassed not only our soldiers, but also the inhabitants of Lower and Upper Egypt. The common duration of the ophthalmy was from seven to eight days. I have seen a great many recover in less time, and I have seen others continue to suffer under it for several months.

Many individuals, after having been cured of ophthalmy once, were attacked again. I had a little Maltese servant, who had this disease every time that he slept in the open air.

Those who took care to manage themselves as they were ordered, recovered perfectly in a short time; others had a great deal of difficulty in getting rid of this disorder; and some who unfortunately were at a distance from all medical assistance, contracted very complicated organic affections, which often terminated in the total loss of the organ of sight.

Description of the Ball of the Eye.

The wish which several very respectable persons have expressed of having first some

ideas of the organization of the ball of the eye, has induced me to give the following short description:

The eye is composed of three coats, which are, the cornea, the choroid, and the retina; and of three humours, namely, the vitreous, crystalline, and aqueous.

The cornea is divided into the transparent and opaque cornea.

The opaque cornea is the most external coat, or what is commonly called the white of the eye; its texture is very compact, and like that of the cornea; it extends from the bottom of the eye forwards to the anterior part, where it meets the transparent cornea.

The transparent cornea is the most elevated part, commonly called the black of the eye, and may be compared to the glass of a watch set in its case.

The transparent cornea is composed of a great many very minute diaphanous laminæ, placed the one over the other, and has a serosity which exudes through the pores of these laminæ.

The choroid is a coat like the skin of a

black grape; it is spread all over the opaque cornea, from the bottom of the eye to its junction with the transparent cornea.

The retina is a coat formed by the expansion of the optic nerve: it is very minute, soft, of a whitish colour, and spread over the bottom of the eye.

The optic nerve is a round white cord, which extends from the brain into the cavity of the eye, where it is expanded, and forms the retina.

The cavity of the eye is divided into two chambers, the one called the anterior, and the other the posterior chamber: the first is very small; the second forms almost the whole cavity of the eye.

The diaphragm, or membranous circle, which divides the cavity of the eye, is called the iris: this very delicate and minute membrane is contiguous to the termination of the transparent cornea, at the place where it is united with the opaque cornea, and has in its middle a small hole called the pupil, which contracts itself in a strong light, and dilates

itself in a weak light. The colour of the iris varies, and according to its varieties, the eyes are black in some persons, and blue in others.

The posterior chamber of the eye is filled by the vitreous and crystalline humours, and the anterior by the aqueous humour.

The vitreous humour is so named from its resemblance to melted glass: it is formed by an extremely fine coat, which includes in its cells a kind of gummy water.

The crystalline is a little transparent body, like a diamond, of a lenticular form, convex on its two sides: it is placed on the anterior part of the vitreous humour, immediately behind the pupil, where it is retained by a very minute coat, called the crystalline.

The anterior chamber comprehends the space which remains between the crystalline lens and transparent cornea, where we find the aqueous humour, so called from its resemblance to water.

The rays of light which convey to the

eyes the images of bodies, undergo a refraction in passing through the transparent cornea and aqueous humour: after having passed through the pupil, the crystalline lens causes them to undergo one still greater, which is lessened by the vitreous humour, and the image is stopt by the retina, the seat of sight.

The ball of the eye is covered by two eyelids, the one the superior, the other the inferior; and we distinguish here two angles, the one the large, or internal, the other the small, or external. The eyelids, or palpebræ, are formed by strong minute ligaments, which support two small curved cartilages, running lengthwise on their edges, which are called tarsi: these tarsi, towards the great angles, have two holes called lachrymal points; they are fringed with hairs, known under the name of cilia. The palpebræ are covered by the common integuments, and are lined internally by a soft flaccid membrane, known by the name of conjunctiva, which is stretched over the surface of the eye as far as the transparent cornea. The inner surface of the palpebræ

is furnished with a number of follicles, called the glands of Meibomius, which secrete from the blood a peculiar fluid for the purpose of keeping the eye moist, and lessening the effects of friction, which results from the continual winking of the palpebræ.

A small gland, situated under the smaller angle of the orbit, furnishes the tears, and is called the lachrymal gland.

At the great angle of each eye we observe a little reddish tubercle, which secretes a mucilaginous fluid, that contributes to retain in the great angle, the dust and other foreign matter which are casually blown into this part. I saw, in Egypt, several individuals who had hairs in this tubercle.

The fluids secreted by the lachrymal glands, the serosity which exudes through the pores of the transparent cornea, the fluids of the glands of Meibomius and of the tubercles, after having moistened the ball of the eye, are absorbed by the lachrymal points, and carried into the lachrymal sac, and from that by the nasal canal into

the nostrils. All these parts have, in their organization, arteries, veins, nerves, and lymphatic vessels, which it would be too tedious to detail.

Description of the Ophthalmy.

The ophthalmy of Egypt first showed itself by a slight headach; sometimes it was preceded by a few shooting pains in the ball of the eye, followed by a flow of tears, which, for the moment, assuaged the pain: often the patient fancied that he had a particle of sand in his eye, which distressed him. We generally remarked, that those in the best health were attacked all at once with ophthalmy, accompanied with an uneasiness and considerable weight in the eyes, followed by an excessive flow of *scalding tears*, to make use of the expression of the sick. On examining the eyes in this state, the vessels of the conjunctiva appeared red and distended; often the conjunctiva was elevated to such a degree, that the transparent cornea appeared

quite buried in it, and of very small diameter. Then the palpebræ became œdematose, the patient could no longer endure the light, the flow of tears increased, and generally became changed into a thick and sometimes yellow matter.*

I think we may call the ophthalmy, arrived at this stage, although very severe, *the simple ophthalmy;* and the ophthalmy *complicated*, when the gorging of the conjunctiva, the swelling of the palpebræ, and the pain of the eyes became so considerable, that fever showed itself, and some injury or organic lesion was perceived in the ball of the eye, as specks, staphylomas, hypo-

* This matter was nothing more than the fluid of the glands, or follicles of Meibomius, which the inflammation had rendered thick. We see this change happen to the skin in slight burns, and after the action of cantharides; for the first day there is nothing poured out from the affected parts but lymph, the day after, thicker matter, which finally becomes changed into true pus. The inflammation of the conjunctiva, in the ophthalmy of Egypt, and that of the membrane of the urethra, afford discharges, of which the appearance is exactly similar.

pious, and other diseases peculiar to this organ.

Causes.

With regard to the cause of the ophthalmy of Egypt, some say that it is the sands of the desert which bring it on; others, that it is ammoniac mixed with the dust; and others that it is nitre. Savaresi says, that the nitrate of potash, which has been improperly called nitrous dust, does not at all injure the eyes, but that it is the clay, which has alumine for its base, and the chalk, which is a combination of the carbonic acid with lime, earthy substances widely scattered over the whole soil of Egypt, which cause the ophthalmy. (See the Egyptian Decade, vol. ii. page 161.)

Amongst the causes, I consider the intense light of the sun as the principal, and that what contributed most to cause a determination to the delicate parts of the ball of the eye, was a considerable degree of irritation, followed by an indirect

debility, to make use of the Brownonian expression. It is not in Egypt only that we find complicated diseases of the eyes, but in many other places. At Bologna in Italy, for example, when a stranger arrives there, he is not long in remarking a considerable number of blind people, who, during the day, sing and play on different instruments in the squares of this great city: one also observes there a great many individuals, who have the eyeball projecting, and more bulky than in its natural state, and staphylomas, specks, and other defects of that kind. It is well known that these affections are the consequence of different inflammations caused by the light of the sun reflected from the walls of the houses, which are white-washed with lime. This light during the summer becomes so intense, that it fatigues and injures the organ of sight, particularly in those persons who, from their sphere in life, or poverty, cannot avoid it. (See the Memoires de la Institut de Sciences de Bologne.)

At Malta, in the year 7 (1799), one half

of the garrison was attacked with the *meralopie*. This disease was attributed to the too great irritation caused by the rays of the sun reflected by the surface of the walls, and from the ground, which is composed of very white calcareous earth.*

In Egypt the view of immense barren plains, the reverberation of the rays of the sun, reflected from the ground, intersected with streets and squares, and from the water and sandy banks of the Nile, the heat and blaze of which are so great at midday, that the eye can scarcely see the spot where one wishes to place one's foot; must necessarily enfeeble, fatigue, and dispose the organ of sight to particular affections. The masons of Egypt being more exposed to this glare of light than others, have

* Citizen Rober, physician to the army of the East, at the head of the hospital staff of the island of Malta, has made some very interesting remarks upon this disorder, on the topography of the island, and the physical and medical constitutions of the years 6, 7, and 8 (1798, 1799, and 1800). It is to be wished, for the benefit of the profession, that he may commit this work to the press.

almost all diseased eyes. Savaresi asserts that this arises from the lime, which they are constantly handling, and from the atmosphere in which they live being loaded with chalky, argillaceous, and calcareous particles. The following fact appears to me to prove completely, that the calcareous particles diffused in the atmosphere do not produce the mischief which is apprehended. In the hospital at Giseh, at the time of its first establishment, the wards were white-washed, or rather laid over with a very thick stratum of lime, applied to the walls by means of a miserable broom of osiers, according to the manner of the country. The walls exhaled, for several days, a very strong smell peculiar to lime, which certainly arose from minute calcareous particles, which, having become very dry, diffused themselves in the atmosphere of the wards. This hospital was appointed to receive the soldiers attacked with the ophthalmy, who were to come to it from the hospitals at Cairo, and who actually arrived to the number of about one hundred, towards

the end of Frimaire, in the year 7 (middle of December 1799), the walls being scarcely dry. Having the care of these men, who had been for a long time suffering under the disease of the eyes, I was very uneasy lest I should see them lose their sight entirely; but I was agreeably surprised on finding them all a great deal better on the following day. Citizens Chateau-Neuf, Dumay, Cerresoli, medical officers, and all the persons attached to this hospital, can attest the truth of this amelioration, which was attributed to the situation being less damp than the wards from which they had come, and to the leaving off the emollient and aqueous collyria, of which they had before been making abuse; and perhaps, to the stimulant action of the calcareous exhalations.

But this much however is certain, that if the dust or the sand of the soil of Egypt were the cause of the ophthalmy, this malady would not cease attacking the inhabitants during the whole course of the year, with the same violence, since there is hardly a day passes without one's being

obliged to walk in a kind of thick mist, or in whirlwinds of dust elevated by the winds, by men on foot and on horseback, and by the camels and asses. To prove this fact, I appeal to those persons who have frequented the highways of Bulac and Old Cairo. If this dust blown into the eyes, were the sole cause of the ophthalmy, when there was no dust we ought to have been exempt from it. We, notwithstanding, experienced the contrary in the Delta, and particularly on the cultivated banks of the Nile, during the time of its inundation. Whenever we were there exposed to currents of air during the night, we were immediately attacked with this disorder, without being able to attribute it either to the sand or dust, which were then under water. It was more particularly, I repeat, during the inundation of the Nile, that a great number of our soldiers were attacked with the ophthalmy. (See the Egyptian Decade.) How came the French of the divison Dessaix, to return from Upper Egypt to Cairo attacked with oph-

thalmy, although they had been constantly embarked upon the Nile? I observed that the sappers appointed to manage the flying bridge established on the Nile, between Giseh and the isle of Raoudah, were all attacked with this disorder; and I have seen a number of persons who had contracted this disease, although they had never stirred out of their houses, which were perfectly secured from any dust.

Having the charge at Cairo of the surgical duty of the military hospital No. 1, I remarked that several wounded men contracted the ophthalmy, from merely having been placed near to a window not properly closed, or in a wretched ward, which had been roofed over with mats laid at such a distance from each other, that in several places one might have observed the course of the stars in the meridian. The ophthalmy supervening upon these unfortunates in the hospital, has been often more difficult to cure than the wounds which brought them there. It cannot be said that it was the dust blown through the windows which was the cause

of the malady, since at that time the squares of Cairo were still inundated, and particularly that of Beker-Tell-Fild, which that very hospital overlooked. This was in Brumaire of the year 7 (October, November 1799).

Nevertheless, I do not pretend to say that the dust of the soil of Egypt may not be hurtful to the eyes, but I think that alone, it is not sufficient to excite ophthalmy; and it appears to me more probable, as I have already said, that this disease arose from the suppression of perspiration, which takes place very often in Egypt, particularly at night, and which throws itself on the weakest part, choosing sometimes the intestines, and oftener the eyes, fatigued by the too vivid light of the sun. Such is, in my opinion, the real cause of the ophthalmy of Egypt.

Indications.

In the general treatment of ophthalmy, it is proper, first, to draw off into other channels the blood and fluids, which

are carried to the eyes in too great quantity. Secondly, to restore their tone to the coats and the other parts of the eye, which are too much relaxed.

General Treatment of the Ophthalmy.

Atony, relaxation, and asthenia, were constantly combined in the ophthalmy of Egypt, denominated with propriety the lymphatic inflammation *(lippitudo)* of the ancients. I had many opportunities of seeing and treating this disease in several hospitals, and particularly at Giseh, a place situated about half a league distant from Cairo, on the left bank of the Nile, surrounded by walls on the south and the west, and washed by the river on the east and north sides. During the time of the overflowing of the Nile, several fields and gardens situated within the precincts of the walls of Giseh, were inundated. The great workshops of the park of artillery lay quite close to these waters; the northerly winds prevailed constantly; the quar-

ters of our workmen and soldiers were not at all secured from the cold air and the damp, which penetrated into their chambers with as much facility during the night as the heat and excessive light entered them during the day: these inconveniences were the principal causes which occasioned the ophthalmy to show itself more at Giseh than elsewhere. To these common causes may be added those which are peculiar to blacksmiths, founders, tinmen, locksmiths, armourers, farriers, bakers, &c. who, from their employments, are exposed to the heat and light of burning coals: in spite of which, during the six months that I had the chief charge of this service, I had the satisfaction of seeing all those affected recover, and in a very short time. Of two thousand attacked with the ophthalmy, whom I attended in Egypt, not one lost his sight, excepting the Abbé Elias, interpreter, a man sixty years of age, and who at last contracted a speck, which prevented him from seeing with the left eye.

In the treatment of this disorder, I re-

commended them not to make use of any cataplasm, to banish milk, washes, and emollient collyria. I followed the custom of the people of the country, who look upon water as most injurious to the eyes. In truth, the abuse which was made of it could not fail to weaken and obstruct still more the parts already too much relaxed. We all know the inconveniences resulting from wetting the eyes day and night, or keeping wet linen rags on the palpebræ. Water too frequently applied to the external surface of the palpebræ and forehead, the neglect of the means acknowledged to be useful, and the abuse of remedies administered by quacks, were the sole causes which produced the bad cases of this disease. At Belbes, a soldier attacked with the ophthalmy experienced such violent pains in his eyes, that, being almost frantic, he rushed out of his lodging, and without seeing where he went, began to run backward and forward. This unfortunate man fell over a heap of pines and palm-trees, and by his fall wounded himself in different places, particularly on the palpe-

bræ, from which there followed a good deal of blood: the pains were relieved, and he recovered in a few days.

It was after this accident that bleeding came into vogue, and there was not a single patient who did not desire to be bled either in the arm, foot, jugulars, or temples; but we very soon discovered that it was blood very unprofitably lost. We then substituted successively the use of leeches, scarifications, blisters, and finally setons. These means were found in general more appropriate, and we should have derived from them much greater advantage, if the sick would have desisted from wetting their eyes so often.

Treatment of the Simple Ophthalmy.

Citizen Bonaud, commissary of war, charged with the service of the park of artillery, a man very well known by his talents and zeal, had seconded me in establishing a little pharmacy, and a consulting room, where such sick as were able to walk came to me every morning.

I immediately administered to them the remedies which I thought necessary. I gave, at the same time, to those with the ophthalmy, a weak solution of verdegrease, prepared according to the method of Janin,* oculist at Lyons, more or less strong according to the degree of turgidity of the vessels of the conjunctiva. When there existed too great a degree of sensibility in the parts, I added to the collyrium a small quantity of the acetite of lead, and I showed them the manner of using it, which consisted in opening the eyelids widely, and letting fall directly on the ball of the eye, one or two drops, or more, which diffused them-

* Mr. Janin's formula is as follows:

R. Aq. Rosæ.
—— Plantaginis. an ℥vj.
Zinc. Vitriolat gr. xxiv.
Pulv. Rad. Iridis. Florent. gr. xxxvi.
Pulv. Æruginis. gr. xij. M. bene in mortario ut ft. collyrium.——He observes, that it is an excellent remedy in the early stage of ophthalmy, as it prevents the constant flow of tears; and that it also improves the sight of aged and short-sighted persons. See Janin Mem. et Observat. &c. sur l'Œil, Paris, 1772. T.

selves all over the surface of the conjunctiva.

This fluid produced at the moment a slight pricking, followed by some tears, which served to wash the edges of the eyelids. I desired this operation to be repeated at least four times a day, recommending to the patients to wipe their eyes frequently with a bit of rag kept for the purpose, but not to wash them. I at the same time made them sensible of the necessity of keeping themselves well covered during the night, and protecting their eyes during the day from the excessive light, by making a kind of shade with their handkerchief, without bandaging their eyes as they had before done.

The facility with which the simple ophthalmy got well, according to this method, confirmed me in my opinion that it was a true defluxion of humours, which might be compared to a coryza.

I was obliged sometimes to make use of small blisters applied to the temples, or behind the ears: I preferred, for this purpose, a blistering plaster, which I allowed

to remain applied during the whole of the attendance, without changing it, or making use of any bandage. I have employed, with advantage, small plasters of this paste, immediately over the teguments of the palpebræ, in order to remove their swelling and atony. In proportion as the symptoms of ophthalmy diminished, I made my collyrium more tonic, not only to assure myself of the cure, but also to prevent a relapse; without which precaution this accident happened very frequently, and then the disorder became more obstinate, and frequently complicated.

When those attacked with ophthalmy were of a plethoric and sanguine temperament, I had recourse to blood-letting; when their bowels were constipated, I prescribed purgatives; and I followed exactly the advice of Hippocrates, who has told us: *Oculorum fluxiones, alvi fluxú curantur.* This practice became still more necessary, when the ophthalmy had succeeded to diarrhœa, which happened very frequently in Egypt.

Treatment of the Complicated Ophthalmy.

The complex ophthalmy varied according to the nature of the organic lesion of the affected parts, the degree of the disease, and other accidental circumstances.

It constantly happens that, in all obstinate ophthalmies, all the functions become deranged, and particularly that of the stomach: hence, affections of this viscus were very frequently complicated with the ophthalmy, which then yielded to the repeated use of emetics and purgatives.

Often the most severe symptoms accompanying ophthalmy arise from a state of extreme sensibility in the patient, and we then find symptoms decidedly nervous. One of my colleagues (Citizen Cerresoli), during his attack, was in such a state of agitation, that he often found himself forced involuntarily to shed scalding tears.

In the complicated ophthalmies, along with a great sensibility of the nervous system, there came on the most violent pains in the head, the pulse became high,

the patients could obtain neither ease nor sleep, and as they were deprived of sight, the fear of remaining in that situation augmented the uneasiness of the sufferer, to whom it became necessary to give soporifics and anodynes, to which was added blood-letting, when the strength and constitution permitted.

When the ophthalmy approached its termination, the patient began to distinguish objects, which appeared to him surrounded with a thick mist; this mist disappeared by little and little; the conjunctiva recovered its natural colour instead of the purple hue which it had before; the excessive sensibility of the retina diminished; and at length, after a good deal of time, trouble, and suffering, the patient found himself quite recovered. But when the ophthalmy became complicated with organic lesion, the consequences were much more troublesome, the treatment varied according to the seat and nature of the affection; sometimes the conjunctiva was so very turgid, that it projected quite beyond the palpebræ, which then could

not entirely cover it. In this case, besides the common remedies, we recommended and practised scarifications, and even horizontal incisions, thereby removing whole portions of the conjunctiva; but I observed that this practice was seldom productive of any good effects: therefore, I prefer the application of leeches, which bring away a greater quantity of blood. The use of the citron ointment No. 14, was of some use, and gradually removed the turgidity of the vessels of the conjunctiva.

At other times the portion of the conjunctiva lining the palpebræ, became so voluminous, that these were reverted, producing the most hideous effect: we then made use of the same remedies as in the turgidity of the conjunctiva. A bandage indeed was suggested, to compress and retain in its position the superior eyelid, after having carefully replaced it; but it very soon became reverted anew.

The majority of those individuals who were attacked with this particular affection, had, at the same time, some other

defect in the ball of the eye: in some the whole of the transparent cornea was become either opaque, or projecting, or ulcerated. In this last case, the transparent cornea being no longer able to resist the pressure of the humours contained within the eye, gave way, and the patient at this moment experienced a shock which he compared to the shot of a pistol, the aqueous humour escaped as at the moment of the incision of the cornea in the operation for extracting the cataract, and the iris coming into contact with the cornea, adhesion of these parts took place, and cut off every hope of restoring sight to these unfortunate sufferers. When specks arose from pus collected between the laminæ of the transparent cornea, they disappeared on giving the matter vent; and when produced by the inflammation of the cornea, they vanished and re-appeared, in proportion as the inflammation diminished or increased.

In several soldiers whom I accompanied from Egypt to France, I observed that the specks which they had at their departure

from Alexandria, were diminished after some days sail; and on their arrival in France, they clearly distinguished objects, not only sideways, as before, but when placed directly before them. I know some of these individuals, who had been reported as invalids in Egypt, and who are at this time in the Consular Guards. Whenever the specks on the transparent cornea do not arise from the disorganisation of its laminæ, there is always reason to hope that the lymphatic vessels will absorb the extravasated and thickened fluids forming these specks; but whenever the organisation is so much changed that the transparent cornea is become opaque in its center, then there remains no other method of restoring vision, but performing the operation for the artificial pupil.*

* I had made at Reggio, in 1788, a small pair of forceps for separating a portion of the iris from the opaque cornea, and making in this manner an artificial lateral pupil, in the form of a crescent. In the year 5 (1797), Citizen Demours, a celebrated oculist in Paris, succeeded in making an artificial pupil, by cutting off a small shred quite close to the

The staphylomas, hypopions, cataracts, and other similar consecutive diseases, require particular treatment, and the most delicate operations, which it was not always prudent to undertake in Egypt. Citizen Larray performed at Cairo some operations of this kind with various success. This ingenious and zealous practitioner was one of the foremost in applying himself to inquiries into the nature of the ophthalmy, and presented to the Institute of Cairo a very full account of this disease. Citizens Bruant and Savaresi have also inserted some reflections on this subject in the Egyptian Decade.

The Treatment used by the Egyptians for the Cure of the Ophthalmy.

When the natives of Egypt are attacked with the ophthalmy, they cover their eyes

opaque cornea, where there did not remain above a fifth of the transparent cornea in a natural state, and separated from the iris. This operation has been followed with the greatest success, and proves the daily progress of surgery in France.

with several muslin handkerchiefs, and are very careful not to touch or apply any thing to them during the first seven days. At night they cover with great care their head and body, by which means the perspiration is restored, which greatly contributes to their recovery in a short time. Often severe symptoms show themselves; and then they make use of various powders, and astringent and tonic collyriums. (See the table, page 150.) Several have their heads shaved, and scarifications made on their temples and foreheads; they apply leeches to the angles of their eyes, and cupping-glasses to the nape of the neck,* blisters behind the ears, where they also sometimes apply cautery; they at the

* The Egyptians, for performing this operation, make use of a small cow's horn open at its base, the other extremity also open, and provided with a kind of parchment valve: they place the base of this horn upon the skin, at the spot where they wish to perform their cupping; they then exhaust the air by means of suction, and after having in this way formed the necessary vacuum, they close the valve, which prevents the entrance of the external air into the cavity of the horn.

same time make use of different ointments, and coloured and thick collyriums; for if the collyriums were liquid and transparent, they would, in their opinion, be hurtful and injurious to the eyes.

At Giseh, and other places, I have seen them paint their eyebrows and all the edge of the orbit, with a pencil dipt in a mixture, either white or yellow, or sometimes black. It was difficult to keep oneself from laughing at seeing these poor sick people almost blind, with the contour of their eyes besmeared with these different colours. They were expressly forbid to touch, wash, or cover their eyes, and were not to use any other remedy for three days, if they wished to get well.

The astonishing number of persons of both sexes, blind in one or both eyes, whom one meets with in Egypt, proves, that their treatment is not at all efficacious. Indeed, in the complicated ophthalmies, what can we expect from such remedies, but loss of eyesight, as some of our soldiers experienced who were thus treated.

I agree with the inhabitants of Egypt,

that emollients, cataplasms, and water, are hurtful in the cure of this disorder; but I assert likewise, that to neglect every kind of remedy is to confide too much to nature, and too little to the resources of art. Their principle of fatalism, *God decrees, God has decreed*, makes them neglect many things which might be of utility to their health.*

* Amongst the great number of blind people whom I examined at Cairo, I saw very few individuals who had true cataracts capable of being operated upon with success. The majority had either staphylomas, or the cornea totally opaque, or the eyes almost entirely evacuated. When I proposed to cure those having cataracts by means of a small incision, they replied to me with the greatest coolness, *I shall be cured without any incision, if God decrees it:* and it was not possible for me to persuade any of these fatalists to allow the operation to be performed.

Citizen Berti, of Venice, surgeon oculist, only performed at Cairo, during eighteen months, two operations for the cataract, on two Beys, with whom he was very much displeased, because, after having completely cured them, they said that they could not see so well as formerly, and that the operation had been badly performed, because he had not evacuated the humours of their eyes with his lancet.

Powders, Ointments, and Collyriums, used in Egypt, in the Treatment of the Ophthalmy.

No. 1. Nut galls and pulverised antimony, each equal parts; mix and make into a powder.

No. 2. This powder mixed with vinegar, forming a kind of ink.

No. 3. Sugar candy, sulphate of alu-

This instance of the folly of the Turks made me determine to abandon the operation for the cataract, to which I had paid a good deal of attention when in France and Italy, where I had practised it with success, both according to the method of Demours, and with an instrument of my own invention, which bears some resemblance to that of Guerin. I had this instrument made at Paris in 1786: it was presented to the Academy of Sciences by Citizen Sebatier, who wished much to read to them my sentiments upon that instrument, and likewise upon that of Citizen Guerin, of Bourdeaux, which had then appeared at Paris.

Citizen Malacarne, professor of surgery at Padua, had these same reflections, and the case in which I had made use of my instrument with success, to be inserted some time afterwards in the Journal of Citizen Bragnatelli, intituled, *Bibliotheca Physico Medica.*

mine, nitrate of potash, equal parts; mix and make into a powder, for destroying specks on the cornea.

No. 4. Chichm * in powder, sugar-candy, alum or sulphate of alumine, equal parts; mix the whole with vinegar.

No. 5. Infusion of saffron, and some

* The chichm is a black seed very common at Cairo: it is brought by the caravans from Darfour and Sennaar. Citizen Delille, member of the Institute of Cairo, sowed this seed in Egypt: it gave the cassia, *absus*; Linnæus, *cassia hispida*; of which he communicated to the Institute of Egypt, and that of France, the following description:—The cassia, *absus*, is a small hairy plant, whole stalk is slender and herbaceous, its leaves alternate, pinnate, composed of two pairs of leaflets, occupying only the upper part of the plant. The flowers are of a deep yellow, and disposed in little loose clusters; they produced hairy, narrow, compressed pods, about five centimetres in length (one inch), enclosing black roundish-oval shining seeds.

Citizen Fontaine, professor at the Jardin des Plantes, told me, that about three years ago Citizen Olivier, member of the Institute, had brought this seed from Persia, under the name of cassia, *absus*; that these seeds had been sown in the Jardin des Plantes; and that they also had produced the cassia hispida.

drops of the tincture of opium as a resolutive, anodyne collyrium.

No. 6. The soap collyrium, a solution of soap in alcohol.

No. 7. The tonic collyrium, a solution of the sulphate of zinc in water, mixed with vinegar and brandy; useful in affections of the palpebræ and tarsi.

No. 8. Muriate of soda dissolved in water mixed with vinegar; useful in the simple ophthalmy.

No. 9. Solution of verdegrease.

No. 10. Solution of acetite of lead.

No. 11. Cerusse mixed with water, used to paint the contour of the eyes white.

No. 12. Saffron bruised and mixed with cerusse and a little vinegar, for painting in yellow.

No. 13. Ink of antimony, for painting in black. (See No. 1.)

No. 14. The desiccative ointment, made by adding some oxide of mercury, formed by the nitric acid to any ointment.

No. 15. The vegeto-mineral water.

On the means of preventing the Ophthalmy.

We have already said that it was not at all difficult to preserve oneself from the ophthalmy, provided we kept ourselves protected from the currents of cold and damp air, it being well known that this precaution alone is sufficient. At Cairo, the Monks and Franks, and also those inhabitants who adopt proper precautions, are not at all subject to this disease.

The soldiers on guard, or upon night piquet, should, during the night, cover up well both their head and feet, and particularly if they are obliged to make a voyage on the Nile; and in cold and damp places, they should avoid as much as possible the smallest currents of air. Several persons have been attacked with the ophthalmy, after having slept near a window, which had not been properly closed. It was in this way that Citizen Fevre, engineer of bridges and causeways, and member of the commission of arts, was attacked with the ophthalmy in one eye, the first night

after his arrival at Cairo from Syria, although he had slept the preceding nights in the open air, in a bark on the Nile, without experiencing the smallest inconvenience, because he had taken care to keep himself well covered. He had a great deal of difficulty in getting rid of his ophthalmy; and if he neglected for a single day to make use of the collyrium (No. 9), he was attacked without fail on the day following. We have remarked, that this collyrium prevented or stopt the progress of the ophthalmy; and I have no doubt that it might also be useful as a preservative. This slight styptic must necessarily act upon the vessels of the conjunctiva, the lachrymal ducts, the glands of Meibomius, the lachrymal caruncle, the pores of the cornea, and preserve these parts from that state of relaxation which is the principal cause of the ophthalmy of Egypt, and of a great many of those of Europe.

The general of division Beillard was severely attacked with the ophthalmy at Giseh, while he commanded that province.

He attributed his cure to that same collyrium; and some time afterwards, having gone into Upper Egypt, I sent to him as a preservative a mixture of verdegrease and acetite of lead in powder, which he dissolved in rose-water. When he happened to be short of the collyrium, I recommended to him the use of a mixture of brandy and pure water. The ointments, besides other inconveniences, were very apt to turn rancid.

In order to diminish the impression of the light, green spectacles have been recommended: this method is very good, but one must use spectacles a little better made than those which the Turks sold to us. They consisted of a half-mask of Morocco leather, furnished with two miserable pieces of coloured glass, pasted between two bits of leather: they lay too close upon the eyes, and heated them very much. Indeed, all those who used them, laid them aside in a short time, after having experienced not only their inutility, but also their inconvenience. As to myself, I never made use either of spectacles,

of collyriums, nor of any preservative to protect me from the burning sand, the nitric, ammoniacal, or calcareous dust, nor even to protect myself from the excessive light: but at no time either the refreshing coolness of the evenings, or the beauty of the nights, could induce me to leave my windows open, or to sleep in the open air; and when I was obliged on duty to do so, my boat-cloak served me for a tent, and became my ægis.

Note. I have no doubt that the catarrhal ophthalmy, which prevailed at Vienna, in Germany, in 1799, was of the nature of the Egyptian ophthalmy. (See the Bibliotheq. Germaniq. tom. iv. page 132.)

THE DESCRIPTION AND PLAN OF

AN HOSPITAL FOR SOLDIERS,

Attacked in Egypt with the Disease called the Plague.

IN speaking of the disease epidemic in Egypt and Syria, called the *Plague*, we pointed out the means to be used for self-preservation; but it must be confessed that it is not always in our power to avoid the causes which produce it; and the soldiers composing the garrisons of Alexandria, Rosetta, and Damietta, may be attacked with it, particularly during the rainy and unhealthy seasons. It is well known, that in order to cure any epidemic disease whatsoever, there is nothing more useful than to place the sick in healthy, dry, and well aired places.

During the twenty years that I have studied and practised physic, I have seen a great many hospitals in Italy, Switzerland, France, England, and Egypt, and met with many very beautiful; but very few indeed which united the advantages necessary for the object proposed: that of Reggio is, in my opinion, the most healthy, and best conducted of all those which I have examined in detail. As surgeon in chief of this hospital for nine years together, I had every opportunity of convincing myself of this truth. The large hospitals are seldom kept clean, and are always unhealthy on account of the number of sick brought together into the same place. The hospitals which I have seen in Lower Egypt, and particularly that at Alexandria, called the hospital for plague-patients, was more adapted for producing than for curing the fever. I am also well convinced, that it is by no means easy to convert churches and mosques into good hospitals, notwithstanding the good will and talents of the engineers; and if we consider the enormous expence which the

repairs of such a place require, before it is converted into an hospital, I am certain that one might have constructed the whole quite new.

It is for the purpose of procuring, if possible, for these etablishments all the advantages of which they are susceptible, that I have conceived the plan of an hospital for the garrisons of the principal cities on the coast of Egypt. I take for granted, that we follow the advice which I gave for preventing the epidemic fevers of this country at the same time; and then an hospital capable of holding about one hundred fever patients, will be sufficient for any garrison whatever, either at Alexandria, Rosetta, or Damietta: and if experience should prove that such an hospital as the one proposed will not be sufficient for the number of sick, we may construct, at a certain distance, another like the first; but we ought to avoid bringing together into the same place too great a number of fever patients. The crowding together a number of sick in the same hospital, has been, and always will be, con-

trary to the true principles of the practice of physic, whatsoever may be the disease; *a fortiori*, in the treating an epidemic, whose symptoms are such as to have procured it the title of the plague. The hospital of which I submit the plan, will not contain more than one hundred beds: it will consist of three wards; a large one for the sick soldiers, a smaller for officers, and a third for convalescents. It will also have a sudatory, or dry bagnio, for oily frictions, the whole on the first floor. The ground floor will contain the necessary offices. This building will be very simple, and easily erected, particularly in Egypt. (See the plan and details.)

DESCRIPTION OF THE PLATES.

PLATE I.

The Ground Floor.

1. The great entrance.
2. The vestibule.
3. Lodge for the porter, built of wood.
4. A similar lodge communicating with the office for admitting patients.

a, *b*, *c*, *d*. Gallery communicating with the different offices of the hospital, having two grated doors at its extremities *a d*.

5. Office for admitting patients.
6. Guard-room.
7. Room for depositing arms.
8. Magazines.
9. Kitchen and offices.
10. Porticoes communicating with the great court.
11. Chamber for receiving patients.
12. Pharmacy, laboratory, and depot of medicines.
13. Pay office.

14. Consulting room.
15. Steward's room.
16. Room for the surgeon on guard.
17. Staircase leading to the first floor.
18. Botanic garden communicating with the pharmacy.
19. Kitchen garden communicating with the kitchen.
20. Great square, or court.
21. Wash-house.
22. Bason for washing the linen.
23. Inclosure for drying the linen.
24. Room for the dead bodies.
25. Room for dissections.
26. Magazine for quick lime.
27. Burying-ground.

PLATE II.

First Floor.

1. Staircase.
2. Room, or sudatory, for warm oily frictions.
3. Upper vestibule, situated between the two divisions of the great ward.

4. Closets of wood, or depots for different purposes.

5. Great ward divided in two by the vestibule.

6. Officers' ward.

7. Ward for convalescents.

8. Great galleries looking towards the court.

9. Necessaries with cisterns.

10. Cisterns for different uses.

11. Troughs for water, or tisans, with gutters leading into the necessaries.

12. Staircase leading to the terrace.

A. East front of the hospital.

PLATE III.

1. Front view of the hospital from the west.

2. Side view from the south.

3. Transverse section at the center of the building.

4. Weather-cock communicating with a wind-dial *(rose de vents)*, situated at the top of the inner part of the vestibule of the great ward.

5. Great terrace, with a parapet wall.

6. Transverse section pointed out in the plans 1 and 2 by the line A B.

7. Tower arising from the vestibule of the great ward.

8. Section of a window opening down to the floor of the ward.

The sections 3 and 4 show the structure of the internal parts: the whole is laid down according to the scales of proportions in the three plates.

Particulars.

There ought to be in each room for the reception of patients, a fire-place, a large bason, a cistern with a bath, some stone seats and presses.

There should be in the room for warm oily frictions, a stove chimney, or a fire-place *à la Desarnold*, and some presses.

In the great ward there should be two tiers of windows, one over the other; the latter should be open down to the floor of the wards, the better to renew the air, the carbonic acid of which always occupies the

lower parts of the wards. They should have gratings formed of perpendicular bars for at least half their height, in order to prevent all accidents which might happen to patients in a state of delirium.

Each of these windows, or balconies, should be closed by two shutters, which should open into the wards; their upper halves should be glazed, and have ventilators to facilitate the passage of light and air into the wards. The shutters of the windows should be made to fit well to each other, so that they may close accurately.

The pavement of the wards should have some degree of slope inwards, so as to prevent, in case of any accident, or after washing the floor, any moisture remaining under the beds, which is a circumstance very essential to the healthiness of an hospital, and generally too much neglected.

The necessaries in that part of the galleries which we have pointed out, would unite the advantages of being without the wards, and at the same time within the

reach of the convalescents and those patients able to walk. They should be placed in excavations in the pillars, in the form of niches, and should be paved and lined with marble. The water from the roofs should flow off by leaden pipes into the necessaries, as well as that from the cisterns; and the troughs for the tisans; that from the pharmacy, the kitchen, the baths, and wash-house, should be carried off into the sea or the Nile by the same common sewer.

Such sick as are unable to go as far as the necessaries, should be placed, by the assistance of the attendants, on a copper vessel tinned over on both sides, and the edges rounded off, to prevent its hurting the thighs of the sick: it should also be pretty strong and wide at its base, so as to sustain the whole weight of a body without any danger of upsetting: it should likewise have a cover to fit its opening exactly. Hence, when thus closed, it will not spread any disagreeable smell, which is an inestimable advantage, particularly to the attendants. The earthen utensils

commonly used should be banished from this hospital, since, if they are not quite new, they become infectious. If, during some of the days in winter, the cold be considerable, which is not uncommon, particularly at Damietta, it will be useful to light pans of coals in the wards, which will also help to change the air.

Among other advantages attending this hospital, would be that of having its own wash-house and burying-ground, distinct, and at the same time quite near. We have all observed with what facility an alarm spreads itself in any city which is suspected of having the plague, while the sight of the dead bodies justifies the dread, and spreads dismay. I confess that I never saw any thing so hideous and shocking as the ferry boat into which the dead bodies proceeding from the hospitals at Jaffa were thrown, for the purpose of being taken out of the city to be buried. In the hospital which I propose, whenever a death happens, the body would be immediately removed into the dead-room, and afterwards consigned, along with some quick

lime and sand, to a deep grave in the burying ground.

The *rose de vents* (wind dial), in the interior of the tower, would point out to the officer on guard whether or not it would be preferable to have the windows of the south or north sides opened, and whether or not the sick should be advised to remain in their wards, or to walk on the great terrace.

By the aid of the necessary instruments with which modern philosophy has made us acquainted, it would be easy to learn not only the degree of heat, but all the other qualities or properties of the atmosphere. These meteorological observations, the medical topography of the environs of the hospital, as well as remarks respecting the succession of diseases, and their causes, should be preserved in a journal kept for this purpose, which would become valuable towards improving the practice of physic.

Citizen Desgenettes, in Thermidor of the year 6 (July 1798), addressed a very interesting circular letter to the physicians

of the army of the East, recommending a plan for collecting the physical and medical topography of Egypt. The majority of his fellow practitioners complied with the wishes of the physician general; but among their reports, I do not find the topographical, meteorological, and medical observations brought together into one journal, or table, as in that which I propose, and which would be very easily kept, whenever the medical officers were furnished with the necessary instruments. Subjoined is the form of a table, which would pretty nearly fulfil and present at one view the object proposed.

METEOROLOGICAL

Made in the Military

Commencing —— day

At sun-rise. Two hours after mid-day. At sun-set.		State of the sky.	Direction of the winds.	Thermometer placed.	
				In the ward.	In the open air.
Monday.	Sun-rise. 2 o'clock. Sun-set.				
Tuesday.	Sun-rise. 2 o'clock. Sun-set.				
Wednesday.	Sun-rise. 2 o'clock. Sun-set.				
Thursday.	Sun-rise. 2 o'clock. Sun-set.				
Friday.	Sun-rise. 2 o'clock. Sun-set.				
Saturday.	Sun-rise. 2 o'clock. Sun set.				
Sunday.	Sun-rise. 2 o'clock. Sun-set.				

OBSERVATIONS.

Hospital at

of the Month ——— of —— year.

Barometer.	Hygrometer.	Electrometer.	Nilometer.	Observations.

MILITARY HOSPITAL AT

MEDICAL TOPOGRAPHY.
PROGRESS OF THE SICK.
THE SPECIES OF DISEASES.
OBSERVATIONS AND REMARKS.

Practice to be followed on the reception of the Sick into the Hospital.

Whenever a patient arrives at the hospital, the porter should show him into the small room adjoining the admitting board (4). There he must be examined by the surgeon on guard, who, after having made himself acquainted with the nature of his disease, should give him a billet, with which he should immediately pass to the room for receiving patients (11), where the storekeeper must make him undo his knapsack, and, after taking an accurate account of all his property, ought to throw his foul linen into a bason full of water, burn his useless effects, and then place the rest in the magazine for the knapsacks (8), and his musket and sabre in the room for depositing arms (7): every article should have a ticket affixed. The patient, after being stript, should be washed with tepid water, and rubbed well with soap from head to foot, after the manner of the Turks. After

this operation, they should throw over him a shirt, a great coat and cap, and give him a pair of wooden sandals: he should then be conducted to the room for frictions (2, Plate II). On being brought into this sudatory, he ought to be placed on a bed, and one or two hospital-attendants should begin rubbing him rather briskly from head to foot with a sponge dipt in warm olive oil. These frictions must be performed quickly, and should not last longer than three or four minutes at farthest: the freshest and purest oil should be made use of. If he has buboes, it will be sufficient merely to anoint them. The patient should be well covered, and will then soon begin to sweat, to encourage which he should take some tea, or other diaphoretic drink. When the sweating begins to subside, the patient should be again dressed in his shirt and great coat, and removed well covered to a bed in the large ward (4), or into the officers' ward (6). These frictions should be repeated every day till the patient is out of danger; and when the physician thinks fit he should be removed into

the convalescents' ward. It is useless to add that the necessary medicines should be administered at the same time, to facilitate the patient's recovery.

As to regimen, that should be regulated by the attending physician. To those attacked with the plague at Smyrna, they give, during the first five or six days, some vermicelli, well boiled in water without salt; afterwards a little rice, some spoonfuls of sweetmeats, a cup of strong Moka coffee, and one or two biscuits. When the patient begins to get better, they give him some soup made with herbs, a little fine white bread, a few raisins, and a very ripe orange or pear. It is not till after the thirtieth day that they give him soup made from meat; and about the end of forty days they permit him to take a little boiled or roasted veal, with a moderate quantity of wine.

With respect to the duty and employment of those attached to this hospital, the regulations should be nearly the same as those of the other military hospitals of the republic.

As it is of importance, in order to preserve oneself from this disease, not to remain too long in the same place, the medical officers, and all the attendants, should be relieved every two months, or sooner, if their health requires it.

All the persons attached to the hospital ought to be lodged out of doors. The surgeon and the apothecary on guard, should be changed every twenty-four hours, and they ought to be at least three days off duty. The hospital orderlies, the servants, and others attached to the ward for receiving patients, to the room for frictions, to the wash-house, stores, &c. should do duty alternately; and when they are not employed, they should be prohibited from entering the hospital. This measure is of more importance than may be imagined, since often the allurement of a few indirect gains causes them to forget the dangers which they run by remaining too long close to the sick. I have seen these fellows lavish their attentions on some poor wretch, because he happened to possess a little money, and

they foresaw that his death was at hand; but no sooner had his purse or his girdle disappeared, than their assiduities diminished, and the more rapidly, if some fresh object for plundering happened to be presented to these demons of avarice.

It was in this way that several individuals contracted the disease, and finished their days without enjoying either the spoils or compensations which they had scraped together.

The salaries of the orderly men, as well as their rations of wine, brandy, and coffee, ought to be augmented, which would contribute to preserve them from the epidemic, and would induce them to pay attention to their duty.

Before concluding, it will be of some utility to mention here some facts which have been published by Father Louis, of Padua, director of the hospital for plague-patients at Smyrna. In 1793, twenty-two Venetian sailors inhabited, during twenty-five days, a damp chamber on the ground floor, along with three persons affected with the plague, who died: the inunction

with oil saved all the others. In the same year three families of Armenians, one thirteen, the second eleven, the third nine in number, preserved themselves by the same means, and attended on their relations who had the plague, without contracting the contagion, although they slept on the same beds, and supported almost constantly these poor creatures in their arms. In 1794, one poor woman remained shut up in the same apartment, along with thirteen persons having the plague; she nursed them all, and preserved herself from the contagion by using frictions with oil. One Ragusan family had that year two of its number attacked with the plague: they dipt themselves (if I may be allowed the expression) in oil, and in consequence entirely escaped. At this day the use of oily frictions is very generally adopted in the Levant.

Citizen Peron, of Toulon, surgeon of the first class in the navy, who has resided at Smyrna for several years as a physician, communicated to me several particulars respecting the plague and oily frictions, all which have confirmed me in the opi-

nions which I have delivered in the course of this work. It is to be wished that Father Louis of Padua, and all those who adopt this practice, would publish their observations; since, in my opinion, the frictions with oil are not only useful in curing, but in preventing the plague. I therefore felt anxious to propose the adoption, and to detail the particulars to be observed in the use of this remedy; and I will add also, that I think the use of oily frictions in a sudatory *(frictions d'huile à étuve)*, may be made of much more extensive application. A great deal might be said on the *modus agendi* of this remedy; but I disclaim all system, and we have not as yet a sufficient number of observations on which to ground a theory: let us be contented for the present with consulting experience, and following its indications.

If it should so happen, that, from the draining of the marshes, the plague, and other diseases of that nature, should disappear, and the coast of Egypt along the Mediterranean should become as healthy as the rest of that fine country, this hospi-

tal may then be appropriated to the reception and cure of patients having the itch, and venereal disease, as the chamber of reception would serve for a bath, and in that set apart for warm oily frictions might be performed the frictions proper in these diseases.

After what I have set forth in this work, there could be nothing to be dreaded on the score of the contagion, which might be communicated to these fresh tenants; besides, an exposure to the air *(une serène)* of all effects for forty days, if judged requisite, would remove every danger and objection.

Patients with dysentery, ophthalmy, and even those with wounds, might be also cured there, as they would be in no danger of hospital fever, or gangrene: the surgeons might perform their operations in the room set aside for frictions. After an engagement, either by sea or land, or in case of a debarkation of troops, if more space should be requisite, the great terrace which is above might be very soon converted into a ward, which would double

the number of beds, and by placing those in the other wards a little closer, room might be made for three hundred provisional beds: and the same number of offices would be sufficient for this service.

During the time of an epidemic, the bringing together so great a number of sick would be perfectly inadmissible, and the hospital should then be put into its former state.

REPORT

MADE TO

THE SOCIETY

OF THE

SCHOOL OF MEDICINE AT PARIS,

Upon a Work written by M. Assalini, intituled, Observations upon the Disease called the Plague, &c.

Extracted from the Registers of the Society of the School of Medicine of Paris: the Sitting of the 14th Ventose, year 9 (6th March 1801).

THE work which M. Assalini presents to the Society, under the title of *Observations on the Disease called the Plague*, &c. contains some remarks made by the author on the diseases which prevailed epidemically in the army of the East, both in

Egypt and in Syria; upon some other diseases reputed contagious; the dysentery and the ophthalmy of Egypt; and the plan of an hospital proper for the treatment of the diseases which are epidemic in this colony.

The intention of the Author is to make known the facts to which he was witness. He has drawn a conclusion differing widely in many respects from the common opinion, particularly on the fact of contagion, as well as on the supposed cause of the disease, known under the name of the plague.

We shall just give a summary idea of the observations contained in this work.

In the Introduction, M. Assalini mentions the circumstances which might possibly affect the health of the soldiers, after the epoch of their landing at Alexandria. The heat of the days, the cold damps of the nights, the exhalations of the marshy lakes, the quality of the food, the scarcity and want of water during their march across the desert plains from Alexandria to Cairo in the year 6, the imprudence of

sleeping out of quarters, or in the currents of air from open windows, comprise the whole of the causes to which the author attributes the greater part of the ophthalmies and dysenteries. He gives afterwards a short description of Jaffa (the ancient Joppa), of the lakes which surround it, and the miseries which the war brought together in that city, in the course of the year 7 (1799).

In the meteorological table of the year 7 (1799), at Cairo, we perceive the climate of Egypt characterised by a remarkable serenity of sky, interrupted only in the month of Nivose (December, January) by some rains; and the whole year divided into six uninterrupted months of a clear serene sky, and into six other months of a sky covered with some clouds, among which are two months of mists, namely, the months of Brumaire and Frimaire (October, November, December).

After these preliminary remarks, the author treats of the diseases which afflicted the army of Egypt during the years 6 and 7 (1798 and 1799).

The principal is a disease which attacks several individuals at the same time, the chief symptoms of which are, fever, buboes, carbuncles, loss of strength, headach, and delirium; which most frequently carries off the patient about the third or fifth day, and which every year shows itself, more or less, along the coasts of the Mediterranean and the Archipelago, from Alexandria to Constantinople. It has been called the *Plague*, a dreadful name, because it conveys to the mind the combined ideas of an inevitable contagion, and almost certain death. Hence, to avoid the fatal influence of a word to which so dreadful an appendage has been linked, the author calls the fevers which desolated the French army by the name of epidemic fevers. By others it has been called the fever with buboes.

Among the characteristic symptoms of these fevers, the author especially remarked an uncommon apathy, in consequence of which the patient seeks out some solitary spot, where, covering his head, and giving himself up to sleep, he becomes

totally indifferent to the most powerful calls of interest, in which state he remains till, seized with delirium, he dies on the third or fifth day after the attack.

Here M. Assalini puts the query, whether or not this disease be really contagious? The following are the facts on which he grounds his reply.

Although a great many persons were attacked with the fever with buboes, after having had communication with the sick, there was a still greater number on whom this intercourse produced no such effect; and, on the other hand, many, in spite of the most complete shutting up, fell under its influence.

The Egyptians, Syrians, and Turks, who communicated without any precaution with the sick, and shared the effects of those who died, did not contract the disease.

The neglect with which the regulations of lazarettos and the laws of quarantines, on the roads from Alexandria and Damietta to Cairo, were observed, did not oc-

casion the disease to spread itself to the latter city.

Into the hospital of Ibrahim Bey three patients were received, who died two days after of the disease; yet of sixty persons who were then in that hospital, not one caught the contagion.

The physicians of the country, and Citizens Desgenettes and Larray, braved the contagion throughout: the first inoculated himself in the arms and groins, yet none of them were attacked with the disease.

The Author received on his hands the pus of buboes which he was laying open: he slept in sheets washed by a woman who died the next day of the disease; a sick woman reposed herself on his bed, and died in like manner on the day after: yet he had no attack of the malady.

In his enquiry into the causes which gave rise to the developing of this disease, in the army of Syria, M. Assalini makes the following reflections.

The Turks made prisoners at El-Arish,

and at Jaffa, could not have communicated the contagion, because they themselves were not affected with the disease.

The division Kleber, at its departure from Damietta, was in very good health, in which state it continued while crossing the desert: the army then arrived free from contagion; it could not, according to the author, meet with the germs of the disease, but in the fatigue, want of water and scarcity of live stock in the desert, in the winds, the rains, and the inconstant weather, and difference of the climate of Syria from that of Egypt, in the topographical disposition of the encampments around Jaffa, in the marshy waters of a lake in the neighbourhood of which was encamped that division of the army, which was the first attacked, although it came direct from Cairo.

Rosetta, Damietta, and Alexandria, surrounded by marshes, and of course exposed to the like influences, are subject to the same diseases.

In Egypt the places elevated above the

damp and infected vapours which fall down upon the plains, were constantly exempt from contagion. These vapours envelope the habitations of the lower country in a mist, which is very visible either at the rising or setting of the sun. Of the places which, on account of situation, are protected from this scourge, the citadel of Cairo is quoted as one instance. Its inhabitants, during the plague of 1791, were exempt from the disease, which laid waste the lower town, with which, nevertheless, they continued to hold constant intercourse. The Author mentions other examples, presenting similar results.

It is a known fact, that in the unhealthy latitudes of Africa and America, one method not only of preserving from, but likewise of curing those affected with the diseases endemic in those places, even when threatened with approaching death, is, the removing them to another situation. Often the wished for effect is produced by the mere change of place, although perhaps the spot to which the journey is

made does not afford superior advantages in point of healthiness.*

M. Assalini observed the same fact in the Egyptian fevers with buboes. He cites a great many instances, from which he concludes, that no distinction ought to be drawn between the causes and phenomena of the production of fevers with buboes, and of those which desolate other countries, and which have never been suspected to be of a contagious type. Lastly, the Author mentions an observation which he thinks important.

During all the time that the English prevented the arrival of any vessel in Egypt, the disease raged in the army of the East. On the contrary, when the blockade was abandoned, and Tripolitan, Algerine, and other vessels were permitted to come in, the disease did not take place during that period.

From all these observations, as might be expected, M. Assalini concludes, that the

* In America, however, it is in the removing from the coast to the interior of the country, that these fortunate changes are most remarked.

disease which attacked the army of the East in Egypt and Syria, and which, considered in its individual symptoms, bore a good deal the character of the disease known by the name of the plague, considered collectively, was evidently epidemic, and not truly contagious; and that it was occasioned by local causes, and not by a germ brought from abroad.

After these reflections, M. Assalini proceeds to the consideration of the treatment. He reduces it to three indications: to diminish plethora, when it exists; to empty the primæ viæ, when they are loaded, and to excite perspiration and sweating. As the two first indications are only conditional, it is evident that the third is that which he considers as essential and fundamental.

We shall not follow him through the details, but will only remark, that one of the means of which he speaks most favourably, either as a preservative, or as useful in the treatment, is the use of coffee without sugar, mixed with citron juice, and given by cupfuls five or six times a day. He

treats pretty fully on oily frictions, which have been for some time celebrated, and appears to place a good deal of confidence in them. In general, the tonic and sudorific treatment followed by Citizens Desgenettes and Larray in Syria, Dieche near Acre, Savaresi at Damietta, Sotira at Rosetta, Ghisleni and Balbes at Alexandria, constantly saved, he says, two thirds of the sick, the greater part affected with buboes.

As to the particular treatment of the carbuncles and buboes, M. Assalini condemns the practice of opening or burning them with the actual cautery, before they come to maturity. He recommends the use of cinchona internally, externally anointing the tumours with oil; and he thinks that they should be opened whenever symptoms of suppuration have appeared.

The particular precautions which M. Assalini made use of for his own preservation, consisted merely in avoiding as much as possible remaining in the unhealthy places, making use of the best food he could procure, and keeping himself

constantly employed, in order to avoid low spirits. He took care to arrive at the hospital without being in a sweat; before going his round, he drank a large cupful of bitter coffee; on leaving the hospital, he rode out on horseback, till he brought on sweating; and, before going to bed, he took a cupful of punch quite hot, which made him perspire profusely during the night. As to the rest, he took no precautions against the contact of the infected, except avoiding the direct impression of their breath.

With regard to general precautions, one of the principal which he recommends, to support which he quotes a number of facts, and on which he relies with most confidence, is, the moving the troops, and successively changing the garrisons from one quarter to another. Lastly, measures of police for keeping the streets clean, and in good order, the necessity of paving them, and of draining the morasses by canals, and filling them up to prevent the stagnation of the waters, are precautions, the importance of which ap-

pear to him evident, on considering the present state of the environs of Damietta, Rosetta, Alexandria, and the fort of Birket-El-Hadji, and which, conjointly with the restoring and bringing to perfection the art of agriculture, appear to him necessary, in order to place Egypt in that state of salubrity which it undoubtedly enjoyed in the time of its ancient prosperity. May his wishes be accomplished: may the beginning of this century witness the complete extermination of two of the most dreadful scourges of humanity, the small-pox and the plague!

After these different observations, the Author gives an account of the customs followed by the Franks or the Europeans in the Levant, the precautions used in lazarettos, and the laws of quarantines. The particulars of this department of the public police are sufficiently known. But possibly some concern may be felt on seeing in what an unfavourable light the Author views these establishments, from his comparing together the deplorable effects resulting from terror and *shuttings up*

during the European plagues, and the less fatal effects, as he says, of the unconcern of the Mussulmen; an indifference which at least prevents them from being deaf to the calls of their friends and relations, who, on their death-bed, implore their assistance. However true the Author's reflections may be, his intention can never be to authorize the national gratitude to be withheld from the patriotism of those citizens who have established and supported, to the present time, the lazaretto of Marseilles, and who, during twenty-four years, have been the sentinels of France, for the purpose of preserving the public health.

M. Assalini next says a few words on the disease which, in the year 8 (1799-1800), attacked the army of Italy in the Ligurian republic. It was of the nature of the jail fever, and was not at all contagious. He adds some reflections on the yellow fever of Cadiz. The several questions which he puts on this point, the doubts which he starts on the degree of mortality caused by that disease, and on

its spreading by contagion, can only be resolved and removed by an exact knowledge of the facts.

The dysentery, to which he was witness in Egypt, appears to him uniformly to arise from the suppression of perspiration, owing to the imprudence with which the soldiers exposed themselves, by sleeping in the cold and damp night air. He distinguishes it into three degrees: the first consisting of simple dysentery, without cholic; the second accompanied by cholic and mucous evacuations; and the third accompanied by fever, bilious, putrid, and bloody evacuations. In the treatment, varied according to the indications and circumstances, the Author mentions the advantages obtained by means of opium, the utility, in certain cases, of blisters applied to the abdomen, and of the fruit called *bao-bab*, or monkey's bread *(Adansonia bao-bab)*, much recommended by the native physicians. He recommends the practice of adding a little coffee, or brandy, to the Nile water, as a preservative against this disease.

Lastly, the ophthalmy, divided by the Author into the simple and the complicated, that is to say, with swelling of the conjunctiva and palpebræ, violent pains and fever, and various organic lesions of the ball of the eye——the ophthalmy appeared to M. Assalini constantly produced by the influence of the cold night air, joined to the fatiguing effect of the burning heat and excessive light of the sun on the organ of sight. The sands driven by the winds, and the saline substances with which they are impregnated, appeared to him to be only accessory influences, which may possibly aggravate the effects, but which are subordinate to the principal cause: in short, that this disease, and the dysentery, in his opinion, only differ from each other in the part affected, and are especially determined in proportion as the one or the other becomes most irritated or enfeebled.

The treatment of the ophthalmy presents nothing new. He reduces it to the employing of means to produce revulsion, and of tonic and astringent collyriums, not

forgetting to follow the indications presented by the several consecutive organic lesions. The remedies of the country are of little value, and the precautions for preventing the attack consist in being careful not to sleep in the open air, but particularly in the current of air from open windows; and when on duty in the field, to keep the head covered, and protected with a cloak.

M. Assalini concludes his work with the plan of an hospital adapted to the country. It consists of a large building, the fronts look to the east and west, and the windows extend from the ceiling to the floor. The ends looking to the south and north are easily shut against these winds, so dangerous in that country. There are likewise rooms adapted for stoves, oily frictions, for the reception of convalescents, and for other purposes. A wind-dial *(rose de vents)*, communicating with a weather-cock, is placed in the ward, in order that the physician may regulate the opening and shutting the windows, and ventilating the wards according to the

weather. The building is terminated at top by an open terrace, adapted for a promenade during the time of the epidemic. There are likewise several other arrangements, well adapted to the necessary purposes of such a building.

Such is the concise idea which we have thought fit to give here of M. Assalini's work. It remains for experience to decide the queries therein discussed on the subject of contagion; queries on which immediately depends the theory of the preservative means, and of those proposed for the destroying the source of the pestilence. However strong his reasoning may appear, before pronouncing judgment it behoves us to wait until the united observations of all those physicians who have observed the same phænomena as himself, upon the same theatre, and at the same time, shall begin to dissipate our doubts, and to teach us whether or not the ancient opinions, consecrated by time, and the authority of the greatest names, ought to be ranked amongst those prejudices which time de-

stroys so slowly, but which the lights of philosophy and science ought at length to overturn.

In supposing the decision perfectly conformable to the observations of M. Assalini, and to the conclusions which he draws from them, there will still remain on the phænomenon of contagion, a great number of other questions to be resolved: and when we not only consider the diversity of opinion amongst the observers, but when we compare the facts with each other, and at the same time consider the phænomena of contagion in those diseases in which this property exists beyond a doubt, it may be asked, whether it may not be possible to imagine that the same disease may not be more or less contagious, or even not at all so, according to circumstances, such as the violence of the epidemic, the state of the intervals of the contagion, and the particular predispositions of those individuals who are attacked with it; predispositions which may have something both of an epidemic, and also

endemic tendency; so that a disease exactly the same in its characteristic symptoms, shall perhaps have been remarked at different times, and in different places, to be contagious or non-contagious, by observers of equal accuracy and information. This is not a question of simple theory, or of pure curiosity.

In pursuing this inquiry, the physician ought, without doubt, to be cool, and unbiassed by prejudice, or any foreign consideration; but he should also be persuaded of this very important truth, that if it be useful in such cases to inspire individuals with confidence, it is no less important not to lull into a false security the solicitude of governments.

Nevertheless, the work of M. Assalini appears to us to be important in its object, valuable from the collection of facts which it presents us, useful and judicious from the manner in which they are compared and discussed; and, without prejudging its ultimate consequences, we think that it may contribute to diffuse information

on a subject become more interesting than ever, and which is thus submitted to the meditations of observers, and the attention of governments.

(Signed) THOURET and HALLE,
Commissioners.

A true copy, in the name of the Committee of Administration of the School of Medicine, the 24th Ventose, in the year 9.

(Signed) THOURET, *Director.*

REPORT

Made to the Consuls of the French Republic by the Minister of War, the 15 Germinal, year 9 (4th April, 1801.)

THE Minister of War has received such important details on the state of the hospitals of the army of the East, that he thinks it proper to submit the result to the inspection of the Consuls.

In Europe, during the war, the number of sick was to that of effective men as one to twelve; and before the revolution, during peace, the proportion was the same. In Egypt it has been, during the month of Brumaire (October and November), as one to twenty-eight; and during Frimaire (November, December), as one to thirty.

In Europe, in the military hospitals, the number of deaths is to that of sick admit-

ted during the month, as one to twenty-three. In Egypt, during the month of Brumaire, the proportion has commonly been as one to forty-three; and in Frimaire, as one to thirty-seven.

The increase of deaths during this last month, was owing to the contagious disease, which, though little spread, was beginning to show itself.

It is known that in Europe the number of sick is to the population as one to twenty, and that in a month the mortality is to the number of sick as one to nineteen. So that the best established facts prove, that the climate of Egypt is already become to Frenchmen more healthy than their native country, or than any other country in Europe: what then will it be when the sciences and arts shall have diffused all their advantages, and shall have banished from it its contagious diseases, and instructed us in the means of preventing the ophthalmy?

By making for those two months the number of daily reports of the sick in the hospitals of the army of the East equal to

unity, we find that the daily reports have been—

For febrile diseases . .	0.393
Wounded . . .	0.187
Venereal . . .	0.369
Contagious disease .	0.007
The ophthalmy . .	0.044
	1.000

You perceive, Citizen Consuls, the remarkable salubrity of this fine country, formerly the cradle of the arts and sciences, which was the granary of Rome, which ought to be the emporium of commerce between India and Europe, and which is one of the theatres on which have been most signally displayed the spirit and bravery of Frenchmen.

(Signed) ALEX. BERTHIER.

ADDITIONAL NOTES.

Page 72, line 4.

CITIZEN CERRESOLI, physician of the army of the East, in his journey from Cairo to Siout, speaking of the plague, says, that he never has been able to collect the information he wished for respecting this disease; but, after a great many accounts, he concludes, that the word plague, or *koubéh*, in Arabic, is a generic denomination applied to acute and malignant diseases.

Page 73, line 18.

It is commonly asserted that the heat in Egypt puts a stop to the progress of the plague, whilst it makes it burst out at Constantinople. How is this fact to be accounted for? The explanation is, in my opinion, very simple. At Constantinople, the exhalations from various bodies in a state of putrefaction are very copious during summer: the cold of winter prevents their formation, and the disease ceases. In Egypt, on the contrary, the action of

the sun is very powerful, even during winter, and gives rise to noxious exhalations, as we have proved elsewhere. When the low grounds have become dry, which happens about the month of Messidor (in June, at the festival of St. John), then the coast of Lower Egypt becomes as healthy as the rest of that fine country.

The environs of Modena were formerly subject to a class of diseases, which Torti has with justice denominated *malignant fevers*, because they frequently carried off the patient during the third paroxysm, and even when considered out of danger. Debility, drowsiness, and excruciating headach, were the principal symptoms of these fevers; between which and those of Egypt there exists a strong resemblance. At this day the malignant fevers of Torti have either disappeared altogether, or are become very rare. This change has been attributed to the filling up of the ditches and morasses which surround the city and citadel of Modena, the corrupting waters of which occasioned exhalations which infected the air. The celebrated Torti has taught us the mode of curing this disease as if by enchantment, by means of Peruvian bark, given in large doses, frequently repeated.

I had an opportunity of seeing and treating this disease near Mantua: its course is so rapid, and its symptoms so violent, that, in order to stop its progress, I was always obliged to give three ounces of bark, mixed with wine or water, in the course of twenty-four hours, between one paroxysm and another; and when the patient was weak, I did not

omit adding more or less of liquid laudanum, according to their state of constitution.

Those physicians who, from a dread that this practice will overheat, or cause obstruction, prefer the use of refrigerants, or purgatives, in order to evacuate the bile, have constantly the mortification of seeing their patients carried off as if apoplectic, and in a very short time; and if they escape, after suffering from fever for several months, they at length become dropsical, which they never fail to attribute to the bark, which they were too late in prescribing. Practitioners of experience, who treat this disease successfully, according to Torti's method, agree, that these diseases may be cured with bark of a good quality, but not with powdered oak-bark, such as was furnished at one time to the military hospitals of the army of Italy; which was the real cause of the loss of many brave men, and of the disease frequently terminating in obstinate obstructions. The physicians and apothecaries who did duty in the different hospitals for febrile diseases at Milan, can attest the truth of this fact.

Page 111, line 3.

Change of place and air was often useful in the most obstinate cases of dysentery.

Citizens Livron, Pagliano, and Corancé, attacked with a diarrhœa which would not give way to all the remedies which Citizen Desgenettes and myself had prescribed them, very soon recovered by removing from Cairo to Alexandria. A great many

persons who had the dysentery very severely at Alexandria, got well by removing to Cairo. I remember General Bessiere, who now commands the cavalry of the Consular Guards at Paris, so ill and pulled down at Cairo, that his life was thought in danger: he recovered in a very short time at Giseh.

Page 114, line the last.

The *hab-hab* is the fruit of the *bao-bab*, or *baho-bab*, a tree of a monstrous size, which grows in Ethiopia and Senegal: by the natives of this island it is called *goui*, and its fruit *boui*; by the French *calebassier*, or *gourd-tree*, and its fruit *pain de singe*, or the *monkey-bread*. Adanson, after returning from Senegal, communicated, in the year 1761, some very curious and interesting particulars respecting this tree, and its medical properties, to the Royal Academy of Sciences at Paris. As these are a good deal connected with the subject I have been just treating, it may not be amiss to give here the following particulars.

The bao-bab, on a near view, looks more like a forest than a single tree. Its trunk is seldom more than ten or twelve feet high, but its circumference is generally from seventy-five to seventy-six feet and a half. This immense trunk is crowned by a great number of branches, remarkable on account of their size, but still more on account of their length, which varies from fifty to sixty feet. That branch which springs from its center rises vertically; but those

from its sides have generally a horizontal direction. These trees commonly have a great many roots, almost as large and numerous as their branches, but of a still greater length. Adanson saw one which measured one hundred and sixty feet long: it belonged to a tree of the middling size.

The leaves of the bao-bab are elliptical, pointed at the extremities, about five inches long, and one or two inches broad, of a moderate thickness, glossy, entire, having no serrated edges, the upper surface of a bright green, the under surface of a pale green colour, crossed obliquely by alternate nerves, rounded off, little elevated, and attached from three to seven together, upon a common foot stalk like a fan, precisely like the horse chesnut.

The flowers of this tree, when in bud, form a globe of almost three inches in diameter; and on blowing, become four inches in length, and one in breadth: two or three spring out from every branch, each suspended by a cylindrical peduncle, a foot long, and five lines thick. The calix of each of these flowers is of a single piece in the shape of a saucer, the edges of which are divided into five equal triangular portions: it is entirely covered with hairs, of a whitish colour, and shining on the upper surface, and green on the under surface; it falls off as soon as the fruit is set. The petals are five in number, within which arises a hollow cylinder, crowned with about seven hundred stamens, in the form of a ring, the filaments of which have on their summit small anthers, which, on bursting, throw out a whitish pollen. From the center of the calix

arises the pistil, the length of which a little exceeds that of the petals; it is composed of three parts, namely, an ovary, a style, and several stigmas. The ovary is egg-shaped, ending in a point, and entirely covered by thick shining hairs; its summit supports a very long cylindrical style, a little bent, hollow internally, and crowned by ten or fourteen prismatic triangular bodies, pretty large and shaggy, called stigmas. The ovary of the flower of the bao-bab, on ripening, becomes a considerable fruit, of an egg-like shape, pointed at both ends, about a foot or a foot and a half long, and from four to six inches thick, suspended by a cylindrical peduncle, about two feet long, and more than one inch in diameter; its rind is woody, very hard, two or three lines thick, and covered externally with a down composed of green hairs, which give it that colour. On rubbing off this down, it appears blackish, and strongly marked by ten or fourteen furrows, which run along its whole length like so many rays: when we cut this fruit through, we discover in it ten or fourteen membranous partitions, of a reddish colour, and stringy texture, which divide it longitudinally from top to bottom into as many cells, which are completely filled with seeds: these partitions are attached to the inner walls of the woody rind, and are joined together at the center of the fruit, as round a common axis, as long as it preserves its first moisture; but, on becoming dry, they separate widely apart, leaving a hollow at the center. In this dry state they resemble a good deal, both in substance and shape, that part of the dura mater called

the falx. The seeds, on opening the fruit, do not appear distinct; nothing is at first seen but a spongy substance, which is whitish in the sound fruits, and reddish in those which are ill formed, or very old. When the fruit is first ripe, this substance forms but one mass, on account of the moisture which it still possesses; but on drying it becomes friable, and separates either of itself or on the smallest shake, into a great many irregular polygons, each of which contains a blackish-brown seed, glossy, kidney-shaped, about five lines long, and three lines thick, from the sinuosity of which arises a cord, or reddish filament, very long, which is attached horizontally, as to a placenta, into the inner edge of the partitions at the center of the fruit.

This tree sheds its leaves in the month of November, and puts them forth anew in June, flowers in July, and in the months of October and November its fruits are quite ripe.

With regard to the medical virtues of this tree, Adanson says, that the natives of Senegal dry the leaves in the shade, and then reduce them to powder, which powder they call *lalo:* they put two or three pinches of this into their food, in order to moderate the excessive heat of their blood, and keep up a plentiful perspiration, which preserves them in good health.

Adanson asserts, that he himself was preserved from the fevers which he calls ardent, and which spread epidemically, attacking the natives of Senegal, and especially the Europeans, whom they carry off in great numbers, during the months of Septem-

ber and October; that is to say, on the sudden ceasing of the rains, when the sun begins to dry up the pools of water, which are left on the ground. At this dangerous season, Adanson made a weak tisan from the leaves of the bao-bab: this tisan is tasteless: when it is made very strong, it discovers a faint taste, which is easily corrected by adding a little sugar, or a little liquorice root. Every year, during these two months only, he took half a pint of this decoction in the morning, and the same quantity in the evening, after the great heat. He likewise took it towards the middle of the day, but that was only when he felt some degree of headach indicating the attack of fever. By this means he prevented, during a residence of five years in Senegal, the diarrhœas and ardent fevers, which are almost the only diseases to be dreaded in that country. To display more strikingly the good effects of this tisan, taken during the critical season, he relates the following fact:

"In the month of September 1751, when the ardent fevers were raging more than had been remembered for several years past in Senegal, I continued," says Adanson, "my fatiguing excursions a hunting and botanising, with as much eagerness as I could have done at home; and one of my friends who followed my example in using the tisan, was the only one besides myself who pursued his usual occupations, whilst all the other French officers were confined to bed, a circumstance which surprised them much, particularly as to my friend, whose very delicate constitution appeared more sus-

ceptible of the impressions of bad air, which was believed to be the chief cause of the epidemic diseases of this season. A remedy so innocent, so simple, and from which I experienced such good effects, ought to be employed during this season, to prevent not only these burning fevers, but also the *ardor urinæ*, which is very common during the sickly season, that is to say, from the month of July till the month of November. Experience has convinced me, that this tisan alone is sufficient, provided wine be abstained from."

The fruit of the bao-bab is of no less use than the leaves we have just mentioned; they eat the fungous pulp surrounding the seeds; it has a sourish taste, rather pleasant, particularly in the fruits of that year, which are still in some degree fresh. In time this fruit loses considerably in its good qualities; nevertheless it is exported from Senegal to the neighbouring nations in the kingdom of Morocco, and in Egypt.

Prosper Alpinus says, that this fruit is brought to Cairo in so dry a state, that its pulp can be reduced into a powder, which is there called *earth of Lemnos*. It is generally used in pestilential fevers, in spittings of blood, the lientery, dysentery, and hepatirrhœa: it is likewise used to moderate the menstrual discharge. The dose of this powder passed through a fine sieve, is one drachm: the physicians prescribe it for the sick above mentioned, and make them take it either in solution in the plantain water, or in infusion or decoction in common water. Prosper Alpinus is the first botanist who

has mentioned this tree, and he has given the following description of its fruit:

" Bao-bab est fructus magnitudine mali citri, cucurbitæ similis, intus semina nigra, dura, extremis in unum semiarium quasi inclinantibus, et substantiam cucurbitarum similem habent, quæ in recentibus est humida, rubra, sapore acido non ingrato fructus recenter ab arbore exscissus, gustui admodum gratus est: valentes extinguit multumque refrigerat, febresque omnes putridas, præcipueque pestilentes sanat. Cairi habitatores fructum in pulverem reddunt, quæ terra Lemnos appellatur; est que apud multos familiarissimus illius ce terræ usus ad pestiferas febres, tum ad sputum sanguinis, ad lienterias, dysenteriam, c. uentumque hepaticum fluorem, necnon ad uteri menses firmandos. Alii huhujusce terræ in subtilissimum pulverem redactæ drachmam cum aqua plantaginis dissolutam exhibent, alii decocto, alii infuso utentes." See *Alpinus. Des Plantis Egypti.*

In the Jardin des Plantes at Paris there are several specimens of the fruit of the bao-bad, in very good preservation. The celebrated Jussieu pointed out to me a covering on the outside of the green down, which I had never observed in Egypt: the taste of the pulp of this fruit was not at all different from that of the powder of Lemnos, which I had tasted at Cairo, and used in the cure of the dysentery.

Citizen Frank, physician of the army of the East, a person well known in the republic of letters, was busily engaged, while I was at Cairo, in a work on

the materia medica of the Egyptians, in which he purposes giving some interesting particulars on the use of the fruit of the bao-bab, and of several other plants brought into Egypt from the interior of Africa. It is to be wished that travellers in foreign countries would imitate the inhabitants of Africa, who are in the habit of carrying constantly with them the seeds of fruits, of pulse, and of those trees of which they make constant use; and it is from this circumstance that several plants from Africa have been transported to America, where, at this time, they have become so multiplied, that they appear natural to these different colonies.

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Citizen Lazowski, chief of a brigade of engineers, who has lately returned to France, assured me, that he had been attacked with ophthalmy in Egypt four different times, and always during the height of the inundations of the Nile, and in those places where there was neither sand nor dust. He went one evening to sail in a boat on the place Lisbekir, in order to assist at an artificial firework on the water; he was immediately attacked with the most violent and obstinate ophthalmy. This distinguished officer also told me, that he had travelled across the desert four times, and had remained during a month at El-Arish, encamped amongst the sands, which were often blown by whirlwinds into the camp, without his having ever experienced an attack of ophthalmy.

The troops in garrison at Kene, and those on the ports on the Nile, in Upper Egypt, had almost all the disorder in their eyes during the time of the inundation, and got well on going to relieve the garrison of Cocyra, a port on the Red Sea, although they had to travel across twenty-four leagues of desert. They attributed their cure to the waters of *Biranba*, a fountain which they met with on their route. This water is whitish, and of a strong cathartic quality.

FINIS.

T. Gillet, Printer, Salisbury-square.